

217/782-2113

CONSTRUCTION PERMIT - PSD APPROVAL  
NSPS-NESHAP EMISSION UNITS

PERMITTEE

Indeck-Elwood LLC  
Attention: Mr. James Schneider  
600 N. Buffalo Grove Road  
Buffalo Grove, Illinois 60089

Application No.: 02030060

I.D. No.: 197035AAJ

Applicant's Designation:

Date Received: March 21, 2002

Subject: Electricity Generation Facility

Date Issued:

Location: Intersection of Drummond and Baseline Roads, Elwood, Will County

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source and air pollution control equipment consisting of an electric power plant with two circulating fluidized bed boilers, fuel handling and storage, limestone handling and storage, ash handling and storage, cooling towers, auxiliary gas-fired boiler, and ancillary operations, as described in the above referenced application. This Permit is granted based upon and subject to the findings and conditions that follow.

In conjunction with this permit, approval is given with respect to the federal regulations for Prevention of Significant Deterioration of Air Quality (PSD) for the plant, as described in the application, in that the Illinois Environmental Protection Agency (IEPA) finds that the application fulfills all applicable requirements of 40 CFR 52.21. This approval is issued pursuant to the Clean Air Act, as amended, 42 U.S.C. 7401 et seq., the federal regulations promulgated thereunder at 40 CFR 52.21 for Prevention of Significant Deterioration of Air Quality (PSD), and a Delegation of Authority agreement between the United States Environmental Protection Agency (USEPA) and the Illinois EPA for the administration of the PSD Program. This approval becomes effective in accordance with the provisions of 40 CFR 124.15 and may be appealed in accordance with provisions of 40 CFR 124.19. This approval is based upon the findings that follow. This approval is subject to the following conditions and consistent with the specifications and data included in the application. Any departure from the conditions of this approval or terms expressed in the application, if not otherwise authorized by this permit, must receive prior written authorization of the Illinois EPA.

If you have any questions on this permit, please call Shashi Shah at 217/782-2113.

Donald E. Sutton, P.E.  
Manager, Permit Section  
Division of Air Pollution Control

DES:SRS:jar

cc: Region 1  
USEPA Region V

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SECTION 1: FINDINGS

- 1a. Indeck-Elwood LLC (Indeck) has requested a permit for a coal fired power plant with a nominal capacity of 660 MW<sub>e</sub> gross. The proposed plant would have two identical circulating fluidized bed (CFB) boilers equipped with limestone injection to the bed, selective noncatalytic reduction (SNCR), and a baghouse. Ancillary operations would include coal handling and storage; ash handling and storage; limestone handling and storage; cooling tower; auxiliary boiler, and other ancillary operations.
- b. The boilers, which each would have a maximum rated capacity of about 2900 million Btu/hour, would be fired on coal as their primary fuel and petroleum coke and coal tailings as supplemental fuels, with natural gas used as the startup fuel. The boilers would generally be designed for coal mined in Illinois that, prior to washing, would nominally have 3.51 percent sulfur by weight and 9,965 Btu per pound higher heating value (HHV), which is equivalent to an uncontrolled sulfur dioxide emission rate of 7.0 pounds per million Btu heat input. The washed coal would have an equivalent uncontrolled sulfur dioxide emission rate of approximately 4.7 pounds per million Btu.
2. The plant would be located on an approximately 130-acre site near Elwood in Will County. The site is in an area that is currently designated nonattainment for ozone and attainment for all other criteria pollutants.
3. The proposed plant is a major source under the PSD rules. This is because the CFB boilers, as indicated in the application, would have potential annual emissions of sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), particulate matter (PM), and carbon monoxide (CO) that are each in excess of 100 tons. The plant would also have the potential to emit significant amounts of sulfuric acid mist, fluorides, and beryllium. (Refer to Table I for the potential emissions of the CFB boilers.)
4. The proposed plant is a major source under Illinois's rules for nonattainment new source review, Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the plant would be located in an area that is designated nonattainment for ozone and, as indicated in the application, would have potential annual emissions of volatile organic materials (VOM) that are in excess of 25 tons. As the plant would be located in an ozone nonattainment, conditions of this construction permit as they relate to emissions of VOM are not considered part of the PSD approval.
5. The proposed plant is a major source for emissions of hazardous air pollutants (HAP). The potential HAP emissions from the plant will be greater than 10 tons of an individual HAP, i.e., hydrogen chloride and hydrogen fluoride. Therefore, the plant is being subjected to review under Section 112(g) of the Clean Air Act.
6. After reviewing the materials submitted by Indeck, the Illinois EPA has determined that the project will (i) comply with applicable Board emission standards (ii) comply with applicable federal emission standards, (iii) utilize Best Available Control Technology (BACT) on emissions of pollutants as required by PSD, (iii) achieve the Lowest Achievable Emission Rate (LAER) for emissions of VOM as required by 35 IAC Part 203, and (v) utilize Maximum Achievable Control Technology (MACT) for emissions of HAP as required by Section 112(g) of the Clean Air Act.

The determinations of BACT, LAER and MACT made by the Illinois EPA for the proposed plant are the control technology determination contained in the permit conditions for specific emission units. For this purpose, as limits are not present for specific hazardous air pollutants, a determination relies upon the limits established for criteria pollutants to also restrict emissions of hazardous air pollutants.

7. The air quality analysis submitted by Indeck and reviewed by the Illinois EPA shows that the proposed project will not cause violations of the ambient air quality standard for NO<sub>x</sub>, SO<sub>2</sub>, PM/PM<sub>10</sub>, and CO. The air quality analysis shows compliance with the allowable increment levels established under the PSD regulations.
8. The analysis of alternatives to the project submitted by Indeck shows that the benefits of the proposed plant outweigh the potential impacts of its emissions of VOM, as required by 35 IAC 203.306.
9. The Illinois EPA has determined that the proposed plant complies with all applicable Illinois Pollution Control Board Air Pollution Regulations; the federal Prevention of Significant Deterioration of Air Quality Regulations (PSD), 40 CFR 52.21; applicable federal New Source Performance Standards (NSPS), 40 CFR 60; and Section 112(g) of the Clean Air Act and applicable federal regulations thereunder, National Emission Standards for Hazardous Air Pollutants (NESHAP) 40 CFR 63, Subpart B.
10. In conjunction with the issuance of this construction permit, the Illinois EPA is also issuing an Acid Rain permit for the proposed CFB boilers, to address requirements of the federal Acid Rain program. These CFB boilers would be affected units under the Acid Rain Deposition Control Program pursuant to Title IV of the Clean Air Act. As affected units under the Acid Rain Program, Indeck must hold SO<sub>2</sub> allowances each year for the actual emissions of SO<sub>2</sub> from the CFB boilers. The CFB boilers are also subject to emissions monitoring requirements pursuant to 40 CFR Part 75. As the Acid Rain permit relates to the Acid Rain Program, it is not considered part of the PSD approval.
11. In conjunction with the issuance of this construction permit, the Illinois EPA is also issuing a Budget Permit for the proposed CFB boilers, to address requirements of the federal Acid Rain program and the NO<sub>x</sub> Trading Program. As the Budget Permit relates to the NO<sub>x</sub> Trading Program, it is not considered part of the PSD approval.
12. A copy of the application, the project summary prepared by the Illinois EPA, a draft of this construction permit, and a draft of the Acid Rain and Budget permits were placed in public locations near the plant, and the public was given notice and an opportunity to examine this material and to participate in a public hearing and to submit comments on these matters.

## SECTION 2: IDENTIFICATION OF SIGNIFICANT EMISSIONS UNITS

Unit Number	Description	Emission Control Measures
1	Boiler 1 - Circulating Fluidized Bed Boiler	Good Combustion Practices, Limestone Addition to the Bed, Selective Non-Catalytic Reduction and Baghouse
	Boiler 2 - Circulating Fluidized Bed Boiler (Identical to Boiler 1)	Good Combustion Practices, Limestone Addition to the Bed, Selective Non-Catalytic Reduction and Baghouse (identical to control for Boiler 1)
2	Bulk Material Handling Operations	Baghouses and Dust Control Measures
3	Cooling Towers	High-Efficiency Drift Eliminators
4	Auxiliary Boiler - Natural Gas Fired Boiler	Low-NO <sub>x</sub> Burners
5	Roadways and Other Sources of Fugitive Dust	Paving and Dust Control Measures

SECTION 3: SOURCE-WIDE CONDITIONS

SOURCE-WIDE CONDITION 1: EFFECT OF PERMIT

- a. This permit does not relieve the Permittee of the responsibility to comply with all local, state and federal regulations that are part of the applicable Illinois State Implementation Plan, as well as all other applicable federal, state and local requirements.
- b. In particular, this permit does not relieve the Permittee from the responsibility to carry out practices during the construction and operation of the plant, such as application of water or dust suppressant sprays to unpaved traffic areas, to minimize fugitive dust and prevent an air pollution nuisance from fugitive dust, as prohibited by 35 IAC 201.141.

SOURCE-WIDE CONDITION 2: VALIDITY OF PERMIT AND COMMENCEMENT OF CONSTRUCTION

- a. This permit shall become invalid as applied to each CFB boiler if construction is not commenced within 18 months after this permit becomes effective, if construction of a boiler is discontinued for a period of 18 months or more, or if construction of a boiler is not completed within a reasonable period of time, pursuant to 40 CFR 52.21(r) (2). This condition supersedes Standard Condition 1.
- b. For purposes of the above provisions, the definitions of "construction" and "commence" at 40 CFR 52.21 (b) (8) and (9) shall apply, which requires that a source must enter into a binding agreement for on-site construction or begin actual on-site construction. (See also the definition of "begin actual construction," 40 CFR 52.21 (b) (11)).

SOURCE-WIDE CONDITION 3: EMISSION OFFSETS

- a. The Permittee shall maintain 140.4 tons of VOM emission reduction credits generated by other sources in the Chicago ozone nonattainment area such that the total is greater than 1.3 times the VOM emissions allowed from this project.
- b. These VOM emission reduction credits are provided by permanent emission reductions as follows. These emission reductions have been relied upon by the Illinois EPA to issue this permit and cannot be used as emission reduction credits for other purposes.

Minnesota Mining and Manufacturing (3M), Bedford Park, I.D. No. 031012AAR  
Shutdown of Coating Line 6H: 140.4 tons/year

This reduction has been made federally enforceable by the withdrawal of the air pollution control permits for Coating Line 6H. Accordingly 3M, must obtain a construction permit if it intends to resume operation of the line in the greater Chicago area, in which permit the Illinois EPA will establish restrictions to assure that the line's actual VOM emissions are permanently reduced by at least 140.4 tons/year.

- c. Documentation shall be submitted to the Illinois EPA as follows confirming that the Permittee has obtained the requisite amount of VOM emission offsets as specified above:

- i. 3M must submit a letter or other document signed by a responsible official or other authorized agent certifying that a transfer of emission reduction credits from Line 6H at its Bedford Park plant has been made to the Permittee in the requisite amount to provide offsets for this proposed plant.
  - ii. The Permittee must submit a letter or other document signed by a corporate officer or other authorized agent certifying that a transfer of emission reduction credits has been received from 3M in the requisite amount to provide offsets for this proposed plant. In this letter, the Permittee must also acknowledge that it may subsequently transfer these offsets to another party or return them to 3M only if the preparation for or actual construction of the proposed plant is terminated and this permit expires or is withdrawn, as the Permittee is otherwise under a legal obligation to maintain these offsets pursuant to 35 IAC 203.602.
  - iii. The above material must be submitted to the Illinois EPA no later than six months after the date that this permit becomes effective.
- d. The Permittee may obtain emission reduction credits from an alternate source located in the Chicago ozone nonattainment area, other than 3M, if the following requirements are met:
- i. Any proposal for an alternate source of emission reduction credits must be received by the Illinois EPA for review not later than three months of the date this permit becomes effective and be accompanied by detailed documentation to support the amount and creditability of the proposed credits.
  - ii. The alternate source(s) of emission reduction credits must be subject to appropriate measures given the nature of the underlying emission reduction to make the reduction permanent and federally enforceable.
  - iii. The use of emission reduction credits from the alternate source(s) must be approved by the Illinois EPA. In conjunction with any such approval, the Illinois EPA may and shall revise this permit so that Condition 3(b) appropriately identifies the source(s) of credits.
  - iv. The Permittee and the alternate source(s) of emission reduction credits must submit to the Illinois EPA, no later than six months after the date that this permit becomes effective, documentation similar in content to that specified by Condition 3(c) to show that transfer of credits has been completed.
- e. The Permittee shall not begin actual construction of the proposed plant until applicable requirements with respect to emission offsets, as specified in Condition 3(b) or (c) above, have been satisfied.

Note: This condition represents the actions identified in conjunction with this project to ensure that the project is accompanied by emission offsets and does not interfere with reasonable further progress in reducing VOM emissions in the Chicago ozone nonattainment area. Emission offsets are being required for this project because USEPA has not approved provisions of the Emissions Reduction Market System (ERMS) 35 IAC Part 205, that would allow compliance with the ERMS to satisfy the emission offset requirements in 35 IAC Part 203.

SOURCE-WIDE CONDITION 4: GENERAL PROVISIONS FOR A MAJOR HAP SOURCE

As the plant is a new major source of hazardous air pollutants (HAP) for purposes of Section 112(g) of the Clean Air Act, the Permittee shall comply with all applicable requirements contained in 40 CFR Part 63, Subpart A, pursuant to 40 CFR 63.43(g)(2)(iv). In particular, for the various emission units at the source, the Permittee shall comply with the following applicable requirements of 40 CFR Part 63 Subpart A, related to startup, shutdown, and malfunction, as defined at 40 CFR 63.2:

- a.
  - i. The Permittee shall at all times, including periods of startup, shutdown, and malfunction as defined at 40 CFR 63.2, operate and maintain emission units at the source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions to the levels required by the relevant standards, i.e., meet the emission standard(s) or comply with the applicable Startup, Shutdown, and Malfunction Plan (Plan), as required below. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Illinois EPA and USEPA, which may include, but is not limited to, monitoring results, review of operation and maintenance procedures (including the Plan), review of operation and maintenance records, and inspection of the unit. [40 CFR 63(e)(1)(i)]
  - ii. The Permittee shall correct malfunctions as soon as practicable after their occurrence in accordance with the applicable Plan. To the extent that an unexpected event arises during a startup, shutdown, or malfunction, the Permittee shall comply by minimizing emissions during such a startup, shutdown, and malfunction event consistent with safety and good air pollution control practices. [40 CFR 63.6(e)(1)(ii)]
  - iii. These operation and maintenance requirements, which are established pursuant to Section 112 of the Clean Air Act, are enforceable independent of applicable emissions limitations and other applicable requirements. [40 CFR 63(e)(1)(iii)]
- b. The Permittee shall develop, implement, and maintain written Startup, Shutdown, and Malfunction Plans (Plans) that describe, in detail, procedures for operating and maintaining the various emission units at the plant during periods of startup, shutdown, and malfunction and a program of corrective action for malfunctioning process, and air pollution control and monitoring equipment used to comply with the relevant emission standards. These Plans shall be developed to satisfy the purposes set forth in 40 CFR 63.6(e)(3)(i)(A), (B) and (C). The Permittee shall develop its initial plans prior to the initial startup of an emission unit(s). [40 CFR 63.6(e)(3)(i)]
  - i. During periods of startup, shutdown, and malfunction of an emission unit, the Permittee shall operate and maintain such unit, including associated air pollution control and monitoring equipment, in accordance with the procedures specified in the applicable Plan required above. [40CFR 63.6(e)(3)(ii)]



- ii. When actions taken by the Permittee during a startup, shutdown, or malfunction (including actions taken to correct a malfunction) are consistent with the procedures specified in the applicable Plan, the Permittee shall keep records for that event which demonstrate that the procedures specified in the Plan were followed. In addition, the Permittee shall keep records of these events as specified in 40 CFR 63.10(b), including records of the occurrence and duration of each startup, shutdown, or malfunction of operation and each malfunction of the air pollution control and monitoring equipment. Furthermore, the Permittee shall confirm in the periodic compliance report that actions taken during periods of startup, shutdown, and malfunction were consistent with the applicable Plan, as required by 40 CFR 63.10(d)(5). [40 CFR 63.6(e)(3)(iii)]
- iii. If an action taken by the Permittee during a startup, shutdown, or malfunction (including an action taken to correct a malfunction) of an emission unit is not consistent with the procedures specified in the applicable Plan, and the emission unit exceeds a relevant emission standard, then the Permittee must record the actions taken for that event and must promptly report such actions as specified by 40 CFR 63.63.10(d)(5), unless otherwise specified elsewhere in this permit or in the CAAPP Permit for the plant. [40 CFR 63.6(e)(3)(iv)]
- iv. The Permittee shall make changes to the Plan for an emission unit if required by the Illinois EPA or USEPA, as provided for by 40 CFR 63.6(3)(3)(vii), or as otherwise required by 40 CFR 63.6(3)(viii). [40 CFR 63.6(3)(3)(vii) and (viii)]
- v. These Plans are records required by this permit, which the Permittee must retain in accordance with the general requirements for retention and availability of records (General Permit Condition 4). In addition, when the Permittee revises a Plan, the Permittee must also retain and make available the previous (i.e., superseded) version of the Plan for a period of at least 5 years after such revision. [40 CFR 63.6(3)(v) and 40 CFR 63.10(b)(1)]

SOURCE-WIDE CONDITION 5: ANCILLARY EQUIPMENT, INCLUDING DIESEL ENGINES

- a. Ancillary equipment, including diesel engines, shall be operated in accordance with good air pollution control practice to minimize emissions.
- b.
  - i. Diesel engines shall be used to meet the internal electricity or power needs of the plant.
  - ii. The power output of each diesel engine shall be no more than 1500 horsepower, if it is an emergency or standby unit as defined by 35 IAC 211.1920, or otherwise no more than 500 horsepower.

SOURCE-WIDE CONDITION 6: AUTHORIZATION TO OPERATE EMISSION UNITS

- a.
  - i. Under this permit, each CFB boiler and associated equipment may be operated for a period that ends 180 days after the boiler first generates electricity to allow for equipment shakedown and required emissions testing. This period may be extended by Illinois EPA upon request of the Permittee if additional time is needed to complete shakedown or perform emission testing. This condition supersedes Standard Condition 6.

- ii. Upon successful completion of emission testing of a CFB bed boiler demonstrating compliance with applicable limitations, the Permittee may continue to operate the boiler and associated equipment as allowed by Section 39.5(5) of the Environmental Protection Act.
- b.
  - i. The remainder of the plant, excluding the CFB boilers, may be operated under this construction permit for a period of 365 days\* after initial startup of a CFB boiler. This period of time may be extended by the Illinois EPA for up to an additional 365 days upon written request by the Permittee as needed to reasonably accommodate unforeseen difficulties experienced during shakedown of the plant. This condition supersedes Standard Condition 6.
  - ii. Upon successful completion of emission testing of a CFB boiler demonstrating compliance with applicable limitations, the Permittee may continue to operate the remainder of the plant as allowed by Section 39.5(5) of the Environmental Protection Act.
- c. For the CFB boilers and other emission units that are subject to NSPS, the Permittee shall fulfill applicable notification requirements of the NSPS, 40 CFR 60.7(a), including:
  - i. Written notification of commencement of construction, no later than 30 days after such date (40 CFR 60.7(a)(1)); and
  - ii. Written notification of the actual date of initial startup, within 15 days after such date (40 CFR 60.7(a)(3)).

SOURCE-WIDE CONDITION 7: RISK MANAGEMENT PLAN (RMP)

Should this source be subject to the Chemical Accident Prevention Provisions in 40 CFR Part 68, then the Permittee shall submit:

- a. A compliance schedule for meeting the requirements of 40 CFR Part 68 by the date provided in 40 CFR 68.10(a); or
- b. A certification statement that the source is in compliance with all applicable requirements of 40 CFR Part 68, including the registration and submission of the Risk Management Plan (RMP).

Note: This condition is imposed pursuant to 40 CFR 68.215(a).

SECTION 4: UNIT-SPECIFIC CONDITIONS FOR PARTICULAR EMISSION UNITS

UNIT-SPECIFIC CONDITION 1: CONDITIONS FOR THE CFB BOILERS

1.1 Emission Unit Description

The affected units for the purpose of these specific permit conditions are two circulating fluidized bed (CFB) boilers with individual air pollution control trains. The boilers are designed to use coal mixed with up to 20 percent petroleum coke as their primary fuel. The boilers also have the capability to burn natural gas, which is used for startup of the boilers.

1.2 Control Technology Determination

- a. Each boiler shall be operated and maintained with the following features to control emissions.
  - i. Good combustion practices.
  - ii. Limestone addition to the bed.
  - iii. Selective noncatalytic reduction (SNCR).
  - iv. Fabric filter or "baghouse".
- b. The emissions from each boiler shall not exceed the following limits except during startup, shutdown and malfunction as addressed by Condition 1.2(e). During the shakedown period provided by Source-Wide Condition 5, a boiler is not subject to the SO<sub>2</sub> reduction requirement below and need only comply with the reduction requirement of the NSPS, 40 CFR Part 60, Subpart Da.
  - i. PM - 0.015 lb/million Btu.

This limit shall apply as a 3-hour block average, with compliance determined by emission testing in accordance with Condition 1.8 and equipment operation.
  - ii. SO<sub>2</sub> - 0.15 lb/million Btu and, if emissions are 0.10 lb/million Btu or greater, 8 percent of the potential combustion concentration (92 percent reduction) of the solid fuel supply, as received.

These limits shall apply on a 30 day rolling average with compliance determined using the compliance procedures set forth in the NSPS, 40 CFR 60.48a.
  - iii. NO<sub>x</sub> - 0.10 lb/million Btu, or such lower limit as set by the Illinois EPA following the Permittee's evaluation of NO<sub>x</sub> emissions and the SNCR system in accordance with Conditions 1.15. For this purpose, the demonstration period for the boiler shall be the first two years of operation.

This limit shall apply on a 30-day rolling average using the compliance procedures of the NSPS, 40 CFR Part 60.48a.

- iv. CO - 0.11 lb/million Btu or 321.4 lb/hr\*.

This limit shall apply on a 24-hour block average basis, with continuous monitoring conducted in accordance with Condition 1.8.

- v. VOM - 0.004 lb/million Btu or 11.7 lb/hr\*.

This limit shall apply as a 3-hour block average, with compliance determined by emission testing in accordance with Condition 1.8 and equipment operation.

\* This alternative standard is the product of the standard in lb/million Btu and the rated heat input capacity of the boiler.

- c. i. The boilers shall each comply with one of the following requirements with respect to emissions of mercury:
  - A. An emission rate of 0.000004 lb/million Btu or emissions below the detection level of established test methodology (Option A);
  - B. A removal efficiency of 95 percent achieved without injection of activated carbon or other similar material specifically used to control emissions of mercury, comparing the emissions and the mercury contained in the fuel supply (Option B);
  - C. Injection of powdered activated carbon or other similar material specifically used to control emissions of mercury in a manner that is designed to achieve the maximum practicable degree of mercury removal (Option C);
  - D. Such other requirement for effective control of mercury emissions as may be established pursuant to Section 112(g) of the Clean Air Act in a revised permit if the Permittee demonstrates that it cannot reasonably obtain performance guarantees or engineering confirmation for compliance with any of the above requirements (Option D); or
  - E. The requirements for control of mercury emissions established by USEPA pursuant to Section 112(d) of the Clean Air Act, once applicable regulations are adopted by USEPA (Option E).
- ii. Compliance with Option A or B shall be demonstrated by periodic testing and proper operation of a boiler consistent with other applicable requirements that relate to control of mercury (e.g., requirements applicable to PM and SO<sub>2</sub> emissions) as may be further developed or revised in the source's CAAPP Permit. Compliance with Option C or D shall be demonstrated by proper operation of a boiler and such other measures specified by the applicable permit. Compliance with Option E shall be shown as specified by the applicable regulations.

- iii. This condition shall take effect 18 months after initial startup of a boiler. However, as related to Options A through D, the Permittee may at any time thereafter, upon written notice to the Illinois EPA, declare an interruption in compliance for a period of 18 months if needed for detailed evaluation of mercury emissions of the boilers or physical changes to the boilers related to control of mercury emissions. As part of its notice for this period, the Permittee shall identify the activities that it intends to perform to evaluate emissions or further enhance control for emissions and specify the particular practices it will use during this period as good air pollution control practice to minimize emissions of mercury.
- d. i. The boilers shall each comply with one of the following requirements with respect to emissions of hydrogen chloride:
  - A. An emission rate of 0.04 lb/million or such lower limit, as low as 0.006 lb/million Btu, as set by the Illinois EPA following the Permittee's evaluation of hydrogen chloride emissions and the acid gas control system, which evaluation shall be submitted with the application for CAAPP permit for the source. This evaluation shall be performed in a manner similar to the evaluation of NO<sub>x</sub> emissions required by Conditions 1.15. Upon submission of the evaluation and until such time as the Illinois EPA completes its review of the evaluation, a boiler shall comply with the emission limit proposed in the evaluation. (Option A);
  - B. A removal efficiency of 95 percent, comparing the emissions and the chlorine content of the fuel supply, expressed as equivalent hydrogen chloride (Option B);
  - C. Such other requirement for effective control of hydrogen chloride emissions as may be established pursuant to Section 112(g) of the Clean Air Act in a revised permit if the Permittee demonstrates that it cannot reasonably obtain performance guarantees for compliance with either of the above requirements (Option C); or
  - D. The requirements for control of hydrogen chloride emissions established by USEPA pursuant to Section 112(d) of the Clean Air Act, once applicable regulations are adopted by USEPA (Option D).
- ii. Compliance with Option A or B shall be demonstrated by periodic testing and proper operation of a boiler consistent with other applicable requirements that relate to control of SO<sub>2</sub> emissions, as may be further developed or revised in the source's CAAPP Permit. Compliance with Option C shall be demonstrated by proper operation of a boiler and such other measures specified by the applicable permit. Compliance with Option D shall be shown as specified by the applicable regulations.
- iii. This condition shall take effect 12 months after initial startup of a boiler. Prior to such date, the Permittee shall use good air pollution control practices to minimize emissions of hydrogen chloride.

- e. The Permittee shall use reasonable practices to minimize emissions during startup, shutdown and malfunction of a boiler as further addressed in Condition 1.6, including the following:
  - i. Use of natural gas, during startup to heat the boiler prior to initiating firing of solid fuel;
  - ii. Operation of the boiler and associated air pollution control equipment in accordance with written operating procedures that include startup, shutdown and malfunction plan(s); and
  - iii. Inspection, maintenance and repair of the boiler and associated air pollution control equipment in accordance with written maintenance procedures.

### 1.3 Applicable Federal Emission Standards

- a.
  - i. The boilers are subject to a New Source Performance Standard (NSPS) for Electric Utility Steam Generating Units, 40 CFR 60, Subparts A and Da. The Illinois EPA administers NSPS in Illinois on behalf of the USEPA under a delegation agreement.
  - ii. The emissions from each boiler shall not exceed the applicable limits pursuant to the NSPS. In particular, the NO<sub>x</sub> emissions from each boiler shall not exceed 1.6 lb/MW-hr gross energy output, based on a 30-day rolling average, pursuant to 40 CFR 60.44a(d).
  - iii. The particulate matter emissions from each boiler shall not exceed 20 percent opacity (6-minute average), except for one 6- minute period per hour of not more than 27 percent opacity pursuant to 40 CFR 60.42a(b).
- b. At all times, the Permittee shall maintain and operate each boiler, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions, pursuant to 40 CFR 60.11(d).

### 1.4 Applicable State Emission Standards

Each boiler is subject to the following state emission standards.

- a. Opacity - 35 IAC 212.122 (20 percent opacity, except as allowed by 35 IAC 212.122(b) ) \*
- b. Particulate Matter - 35 IAC 212.201 (0.1 lb/million Btu)\*\*
- c. Sulfur Dioxide - 35 IAC 214.121 (1.2 lb/million Btu)\*\*
- d. Carbon Monoxide - 35 IAC 216.121 (200 ppm, @ 50 % excess air)\*\*
- e. Nitrogen Oxides - 35 IAC 217.121 (0.7 lb/million Btu)\*\*

\* This standard is not as stringent as Condition 1.3(a) (iii).

\*\* This standard is not as stringent as Condition 1.2.

#### 1.5. Applicability of Other Regulations

- a. Each boiler is an affected unit under the federal Acid Rain Deposition Control Program pursuant to Title IV of the Clean Air Act and is subject to certain control requirements and emissions monitoring requirements pursuant to 40 CFR Parts 72, 73 and 75. (See also Trading Program Condition 1, (Section 5, Condition 1).
- b. The boilers would qualify as Electrical Generating Units (EGU) for purposes of 35 IAC Part 217, Subpart W, the NO<sub>x</sub> Trading Program for Electrical Generating Units. As EGU, the Permittee would have to hold NO<sub>x</sub> allowances for the NO<sub>x</sub> emissions of the boilers during each seasonal control period. (See also Trading Program Condition 3 (Section 5, Condition 3).
- c. For particulate matter, the boilers are pollutant-specific emissions units that will be subject to 40 CFR Part 64, Compliance Assurance Monitoring for Major Stationary Sources. As such, the application for Clean Air Act Permit Program (CAAPP) Permit for the source must include a Compliance Assurance Monitoring (CAM) plan for the boilers.

#### 1.6 Operating Requirements

- a. The Permittee shall operate each boiler and associated air pollution control equipment in accordance with good air pollution control practice to minimize emissions, by operating in accordance with detailed written operating procedures as it is safe to do so, which procedures at a minimum shall:
  - i. Address startup, normal operation, and shutdown and malfunction events and provide for review of relevant operating parameters of the boiler systems during startup, shutdown and malfunction as necessary to make adjustments to reduce or eliminate any excess emissions.
  - ii. With respect to startup, address readily foreseeable startup scenarios, including so called "hot startups" when the operation of a boiler is only temporarily interrupted and provide for appropriate operating review of the operational condition of a boiler prior to initiating startup of the boiler.
  - iii. With respect to malfunction, identify and address likely malfunction events with specific programs of corrective actions and provide that upon occurrence of a malfunction that will result in emissions in excess of the applicable limits in Condition 1.2, the Permittee shall, as soon as practicable, repair the affected equipment, reduce the operating rate of the boiler or remove the boiler from service so that excess emissions cease.

Consistent with the above, if the Permittee has maintained and operated a boiler and associated air pollution control equipment so that malfunctions are infrequent, sudden, not caused by poor maintenance or careless operation, and in general are not reasonably preventable, the Permittee shall begin shutdown of the boiler within 90 minutes, unless the malfunction is expected to be repaired within 120 minutes or such shutdown could threaten the stability of the regional electrical power supply. In such case, shutdown of the system shall be undertaken when it is apparent that repair will not be accomplished within 120 minutes or shutdown will not endanger the regional power system. In no case shall shutdown of the boiler be delayed solely for the economic benefit of the Permittee.

Note: If the Permittee determines that the continuous emission monitoring system (CEMS) is inaccurately reporting excess emissions, the boiler may continue to operate provided the Permittee records the information it is relying upon to conclude that the boiler and associated emission control systems are functioning properly and the CEMS is reporting inaccurate data and the Permittee takes prompt action to resolve the accuracy of the CEMS.

- b. The Permittee shall maintain each boiler and associated air pollution control equipment in accordance with good air pollution control practice to assure proper functioning of equipment and minimize malfunctions, including maintaining the boiler in accordance with written procedures developed for this purpose.
- c. The Permittee shall handle the fuel for the boilers in accordance with a written Fuel Management Plan that shall be designed to provide the boilers with a consistent fuel supply that meets relevant criteria needed for proper operation of the boilers and their control systems.
- d. The Permittee shall review its operating and maintenance procedures and its fuel management plan for the boilers as required above on a regular basis and revise them if needed consistent with good air pollution control practice based on actual operating experience and equipment performance. This review shall occur at least annually if not otherwise initiated by occurrence of a startup, shakedown, or malfunction event that is not adequately addressed by the existing plans or a specific request by the Illinois EPA for such review.

#### 1.7 Emission Limitations

Emissions from the boilers shall not exceed the limits in Table I. The limits in Table I are based upon the emission rates and the maximum firing rate specified in the permit application consistent with the air quality analysis submitted by the Permittee to comply with PSD. Compliance with hourly limits shall be determined with testing and monitoring as required by Conditions 1.8 and 1.9 and proper equipment operation in accordance with Condition 1.6.



## 1.8 Emission Testing

- a. i. A. Within 60 days after achieving the maximum production rate at which a boiler will be operated but not later than 180 days after initial startup of each boiler, the Permittee shall have tests conducted for opacity and emissions of NO<sub>x</sub>, CO, PM, VOM, SO<sub>2</sub>, hydrogen chloride, hydrogen fluoride, sulfuric acid mist, and mercury and other metals as follows at its expense by an approved testing service while the boiler is operating at maximum operating load and other representative operating conditions, including firing of coal only and coal with supplemental fuel.
    - B. This period of time may be extended by the Illinois EPA for up to an additional 365 days upon written request by the Permittee as needed to reasonably accommodate unforeseen difficulties in the startup and testing of the boiler, provided that initial performance testing required by the NSPS, 40 CFR Part 60, Subpart Da has been completed for the boiler and the test report submitted to the Illinois EPA.
  - ii. A. The Permittee shall also test PM emissions from each boiler as provided below at a regular interval that is no greater than 36 months, except as follows. If the results of two of these PM tests consecutively for a boiler demonstrate PM emissions of 0.010 lb/million Btu or less, the maximum interval for testing of such boiler may be doubled, i.e., PM testing at least once every 72 months. However, if a PM test for such a boiler then shows PM emissions above 0.010 lb/million Btu, the maximum interval between testing shall revert to 36 months until two consecutively tests again show PM emissions of 0.010 lb/million Btu or less.
    - B. Whenever PM testing for a boiler is performed as required above, testing for emissions of mercury shall also be performed as provided below.
  - iii. In addition to the emission testing required above, the Permittee shall perform emission tests as requested by the Illinois EPA for a boiler within 45 days of a written request by the Illinois EPA or such later date agreed to by the Illinois EPA.
- b. The following methods and procedures shall be used for testing, unless otherwise specified or approved by the Illinois EPA.

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3 or 3A
Moisture	Method 4
Particulate Matter <sup>1</sup>	Method 5, as specified by 40 CFR 60.48a(b), and Method 201 or 201A (40 CFR 51, Appendix M),
Condensable Particulate	Method 202

Opacity <sup>2</sup>	Method 9, as specified by 40 CFR 60.48a(b)(3)
Nitrogen Oxides <sup>2</sup>	Method 19, as specified by 40 CFR 60.48a(d)
Sulfur Dioxides <sup>2</sup>	Method 19, as specified by 40 CFR 60.48a(c)
Carbon Monoxide <sup>2</sup>	Method 10
Volatile Organic Material <sup>3</sup>	Method 18 or 25A
Sulfuric Acid Mist	Method 8
Hydrogen Chloride	Method 26
Hydrogen Fluoride	Method 26
Metals <sup>4, 5</sup>	Method 29

Notes:

1. The Permittee may report all PM emissions measured by USEPA Method 5 as PM<sub>10</sub>, in which case separate testing using USEPA Method 201 or 201A need not be performed.
  2. Emission testing shall be conducted for purposes of certification of the continuous emission monitors required by Condition 1.9. Thereafter, the NO<sub>x</sub>, SO<sub>2</sub> and CO emission data from certified monitors may be provided in lieu of conducting emissions tests.
  3. The Permittee may exclude methane, ethane and other exempt compounds from the results of any VOM test provided that the test protocol to quantify and correct for any such compounds is included in the test plan approved by the Illinois EPA.
  4. For purposes of this permit, metals are defined as mercury, arsenic, beryllium, cadmium, chromium, lead, manganese, and nickel.
  5. During the initial emissions testing for metals, the Permittee shall also conduct measurements using established test methods for the principle forms of mercury present in the emissions, i.e., particle bound mercury, oxidized mercury and elemental mercury.
- c.
- i. Test plans, test notifications, and test reports shall be submitted to the Illinois EPA in accordance with the General Condition 2 (Section 6, Conditions 2)
  - ii. In addition to other information required in a test report, test reports shall include detailed information on the operating conditions of a boiler during testing, including:
    - A. Fuel consumption (in tons);
    - B. Composition of fuel (Refer to Condition 1.10(b));
    - C. Firing rate (million Btu/hr) and other significant operating parameters of the boiler, including temperature in the boiler in the area before the SNCR system;

- D. Control device operating rates, e.g., limestone addition rate, SNCR reagent injection rate, baghouse pressure drop, etc.; and
- E. Turbine/Generator output rate (MWe).

#### 1.9 Emission Monitoring

- a.
  - i. The Permittee shall install, certify, operate, calibrate, and maintain continuous monitoring systems on each boiler for opacity, emissions of SO<sub>2</sub>, NO<sub>x</sub> and CO, and either oxygen or carbon dioxide in the exhaust.
  - ii. The type of monitoring equipment and sampling location(s) shall be approved by the Illinois EPA prior to installation.
  - iii. The Permittee shall fulfill the applicable requirements for monitoring in the NSPS, 40 CFR 60.13, 60.47a, and 40 CFR 60 Appendix B, the federal Acid Rain Program, 40 CFR Part 75, and 35 IAC Part 217, Subpart W, the NO<sub>x</sub> Trading Program for Electrical Generating Units. These rules require that the Permittee maintain detailed records for both the measurements made by these systems and the maintenance, calibration and operational activity associated with the monitoring systems.
- b. In addition, when NO<sub>x</sub> or SO<sub>2</sub> emission data are not obtained from a continuous monitoring system because of system breakdowns, repairs, calibration checks and zero span adjustments, emission data shall be obtained by using standby monitoring systems, emission testing using USEPA Reference Methods (Method 7 or 7A for NO<sub>x</sub> and Method 6 for SO<sub>2</sub>), or other approved methods as necessary to provide emission data for a minimum of 75 percent of the operating hours in a boiler operating day, in at least 22 out of 30 successive boiler operating days, pursuant to 40 CFR 60.47a(f) and (h).

Note: Fulfillment of the above criteria for availability of emission data from a monitoring system does not shield the Permittee from potential enforcement for failure to properly maintain and operate the system.

#### 1.10. Operational Monitoring and Measurements

- a. The Permittee shall install, evaluate, operate, and maintain meters to measure and record consumption of natural gas by each boiler.
- b.
  - i.
    - A. The Permittee shall sample and analyze the sulfur and heat content of the fuel supplied to the boilers in accordance with USEPA Reference Method 19 (40 CFR 60, Appendix A, Method 19).
    - B. This sampling and analysis shall include separate measurements for the sulfur and heat content of the fuels supplied to the boilers.
  - ii. The Permittee shall analyze samples of all coal supplies and any alternate fuel supplies that are components in the solid fuel supply to the boilers and the solid fuel supply itself for mercury and other metals, chlorine and fluorine content, as follows:

- A. Analysis shall be conducted in accordance with USEPA Reference Methods or other method approved by USEPA.
  - B. Analysis of the fuel supply to the boiler itself shall be conducted in conjunction with performance testing of a boiler.
  - C. Analysis of representative samples of solid fuels shall be conducted in conjunction with acceptance of fuel from a new coal mine or an alternate fuel.
  - D. Analysis of representative samples of solid fuels shall be conducted at least every two years, if a more frequent analysis is not needed pursuant to the above requirements.
  - E. The CAAPP permit may revise or relax these requirements.
- c. i. The Permittee shall install, operate and maintain systems to measure key operating parameters of the control equipment and control measures for each boiler, including:
- A. Limestone addition rate to the bed;
  - B. Temperature in the boiler in the area before the SNCR system;
  - C. Reagent injection rate for the SNCR unit;
  - D. Pressure drop across the baghouse.
- ii. The Permittee shall maintain the records of the measurements made by these systems and records of maintenance and operational activity associated with the systems.

#### 1.11. Recordkeeping

- a. The Permittee shall maintain the following records with respect to operation and maintenance of each boiler and associated control equipment:
  - i. An operating log for the boiler that at a minimum shall address:
    - A. Each startup of the boiler, including the nature of the startup, sequence and timing of major steps in the startup, any unusual occurrences during the startup, and any deviations from the established startup procedures, with explanation;
    - B. Each shutdown of the boiler including the nature and reason for the shutdown, sequence and timing of major steps in the shutdown, any unusual occurrences during the shutdown, and any deviations from the established shutdown procedures, with explanation; and
    - C. Each malfunction of the boiler system that significantly impairs emission performance, including the nature and duration of the event, sequence and timing of major steps in the malfunction,

corrective actions taken, any deviations from the established procedures for such a malfunction, and preventative actions taken to address similar events.

- ii. Inspection, maintenance and repair log(s) for the boiler system that at a minimum shall identify such activities that are performed as related to components that may effect emissions; the reason for such activities, i.e., whether planned or initiated due to a specific event or condition, and any failure to carry out the established maintenance procedures, with explanation.
- iii. Copies of the steam charts and daily records of steam and electricity generation.
- b. The Permittee shall maintain records of the following items related to fuels used in the boilers:
  - i. Records of the sampling and analysis of solid fuel supply to the boilers conducted in accordance with Condition 1.10(b).
  - ii. A. The sulfur content of solid fuel, lb sulfur/million Btu, supplied to each boiler, as determined pursuant to Condition 1.10(b)(i); and  
B. The sulfur content of solid fuel supplied to the boiler on a 30-day rolling average, determined from the above data.
  - iii. The amount of fuel combusted in each boiler by type of fuel as specified in 40 CFR Part 60, Appendix A, Method 19.
- c. For each boiler, the Permittee shall maintain records of the following items related to emissions:
  - i. Records of SO<sub>2</sub> NO<sub>x</sub> and PM emissions and operation for each boiler operating day, as specified by 40 CFR 60.49a.
  - ii. With respect to the SO<sub>2</sub> reduction based limit in Condition 1.2(b)(ii) and 1.3, for each 30 day averaging period, the SO<sub>2</sub> emissions in lb/million Btu and the required SO<sub>2</sub> emission rate as determined by applying the permissible emission fraction to the potential SO<sub>2</sub> emission rate of the solid fuel supply.
  - iii. Records of CO emissions of the boiler based on the continuous emissions monitoring system required by Condition 1.9.
  - iv. Records of emissions of VOM, mercury and other pollutants from the boiler, based on fuel usage and other operating data for the boiler and appropriate emission factors, with supporting documentation.
- d. The Permittee shall record the following information for any period during which a boiler deviated from applicable requirements:

- i. Each period when the pressure drop of the baghouse, as measured pursuant to Condition 1.10, deviated outside the levels set as good air pollution control practice (date, duration and description of the event).
- ii. Each period when a baghouse failed to operate properly, which records shall include at least the information specified by General Condition 3 (Section 6, Condition 3).
- iii. Each period during which an affected unit exceeded the requirements of this permit, including applicable emission limits, which records shall include at least the information specified by General Condition 3 (Section 6, Condition 3).

#### 1.12. Notifications

- a. The Permittee shall notify the Illinois EPA within 30 days of deviations from applicable requirements that are not addressed by the regular reporting required below. These notifications shall include the information specified by General Condition 4 (Section 6, Condition 4).
- b. The Permittee shall notify the Illinois EPA in writing at least 30 days prior to initial firing of any solid fuel other than coal, petroleum coke or coal tailings in a boiler.

#### 1.13. Reporting

- a.
  - i. The Permittee shall fulfill applicable reporting requirements in the NSPS, 40 CFR 60.7(c) and 60.49a, for each boiler. For this purpose, quarterly reports shall be submitted no later than 30 days after the end of each calendar quarter. (40 CFR 60.49a (i))
  - ii. In lieu of submittal of paper reports, the Permittee may submit electronic quarterly reports for SO<sub>2</sub>, NO<sub>x</sub> or opacity. The electronic reports shall be submitted no later than 30 days after the end of the calendar quarter and shall be accompanied by a certification statement indicating whether compliance with applicable emission standards and minimum data requirements of 40 CFR 60.49a were achieved during the reporting period. (40 CFR 60.49a(j))
- b.
  - i. Either as part of the periodic NSPS report or accompanying such report, the Permittee shall report to the Illinois EPA any and all opacity and emission measurements for a boiler that are in excess of the respective requirements set by this permit. These reports shall provide for each such incident, the pollutant emission rate, the date and duration of the incident, and whether it occurred during startup, malfunction, breakdown, or shutdown. If an incident occurred during malfunction or breakdown, the corrective actions and actions taken to prevent or minimize future reoccurrences shall also be reported.
  - ii. These reports shall also address any deviations from applicable compliance procedures for a boiler established by this permit, including specifying periods during which the continuous monitoring systems were not in operation.

- c. The Permittee shall comply with applicable reporting requirements under the Acid Rain Program, with a single copy of such report sent to Illinois EPA, Bureau of Air, Compliance and Enforcement Section.

#### 1.14 Operational Flexibility/Anticipated Operating Scenarios

- a. The Permittee is authorized to use fuel from different suppliers in the boilers without prior notification to the Illinois EPA or revision of this permit.
- b. This condition does not affect the Permittee's obligation to continue to comply with applicable requirements or to properly obtain a construction permit in a timely manner for any activity involving the boiler or the fuel handling equipment that constitutes construction or modification of an emission unit, as defined in 35 IAC 201.102.

#### 1.15 Optimization of Control of NO<sub>x</sub> Emissions

- a.
  - i. The Permittee shall evaluate NO<sub>x</sub> emissions from boilers to determine whether a lower NO<sub>x</sub> emission limit (as low as 0.08 lb/million Btu) may be reliably achieved while complying with other emission limits and without significant risk to equipment or personnel. This evaluation shall also examine whether there will be significant increase in ammonia-related emissions from the boilers, as well as unreasonable increase in maintenance and repair needed for the boilers.
  - ii. This permit will be revised to set lower emission limit(s) for NO<sub>x</sub> emissions (but no lower than 0.08 lb/million Btu) if as a result of this evaluation the Illinois EPA finds that the boilers can consistently comply with such limit(s). Additional parameters or factors, e.g., the nitrogen content of the fuel supply, may be included in such limits to address particular modes of operation during which particular emission limits may or may not be achievable.
  - iii. If the Permittee fails to complete the evaluation or submit the required report in a timely manner, the NO<sub>x</sub> emission limit shall automatically revert to 0.08 lb NO<sub>x</sub> per million Btu
- b. The Permittee shall perform this evaluation of NO<sub>x</sub> emissions in accordance with a plan submitted to the Illinois EPA for review and comment. The initial plan shall be submitted to the Illinois EPA no later than 90 days after initial start-up of a boiler.
- c. The plan shall provide for systematic evaluation of changes, within the normal or feasible range of operation, in the following elements as related to the monitored NO<sub>x</sub> emissions:
  - i. Boiler operating load and operating settings;
  - ii. Operating rate and settings of the SNCR system;
  - iii. Flue gas temperature at SNCR injection point(s);
  - iv. Combustion settings, including excess oxygen;

- v. Limestone and sorbent usage rates;
  - vi. Nitrogen content of the fuel supply;
  - vii. Particulate matter and operating parameters for baghouses;
  - viii. Opacity, particulate matter and sulfuric acid mist emissions; and
  - ix. Ammonia slip (emissions of ammonia and secondary ammonia compounds).
- d. The Permittee shall promptly begin this evaluation after a boiler demonstrates compliance with the applicable emission limits as shown by emission testing and monitoring. At this time, the Permittee shall submit an update to the plan that describes its findings with respect to control of NO<sub>x</sub> emissions during the shakedown of the boilers, which highlights possible areas of concern for the evaluation.
- e. i. This evaluation shall be completed and a detailed written report submitted to the Illinois EPA within two years after the initial startup of a boiler. This report shall include proposed alternative limit(s) for NO<sub>x</sub> emissions.
- ii. This deadline may be extended for an additional year if the Permittee submits an interim report demonstrating the need for additional time to effectively evaluate NO<sub>x</sub> emissions.

#### 1.16 Construction of Additional Control Measures

The Permittee is generally authorized under this permit to construct and operate additional devices and features to control emissions from a boiler, which are not described in the application for this permit, as follows. This condition does not affect the Permittee's obligation to comply with the applicable requirements for the boilers:

- a. This authorization only extends to devices or features that are designed to reduce emissions, such as the addition of adsorbent materials other than limestone to the boiler bed and ductwork injection of sorbent materials or dry scrubbing prior to the baghouse. These measures may also serve to improve boiler operation as they reduce consumption of materials but do not include measures that would increase a boiler's rated heat input capacity.
- b. This authorization only extends to additional devices or features that are identified during the detailed design of the boilers and any refinements to that design that occur during construction and the initial operation of the boilers.
- c. Prior to beginning actual construction of any such device or feature, the Permittee shall apply for and obtain a separate construction permit for it from the Illinois EPA pursuant to 35 IAC Part 201, Subpart D. In the application for this permit, the Permittee shall describe the additional device or feature and explain how it will act to reduce emissions, with detailed supporting documentation. In acting upon this permit, the Illinois EPA may specify additional operating parameters that must be measured and additional provisions for required emissions testing.



- d. Upon written request by the Illinois EPA, the Permittee shall promptly have dispersion modeling performed to demonstrate that the proposed device or feature for which a construction permit would be required does not significantly effect the air quality impacts from the boilers, so that impacts from the boilers are of the same magnitude of those predicted by the air quality analysis accompanying the application.

UNIT-SPECIFIC CONDITION 2: CONDITIONS FOR BULK MATERIAL HANDLING OPERATIONS

2.1 Description of Emission Units

The affected units for the purpose of these unit-specific permit conditions are operations that handle materials in bulk that have the potential for particulate matter emissions, including coal, petroleum coke, coal tailings, limestone, and ash. Affected units include receiving, transfer, handling, storage, processing or preparation (drying, crushing, etc.) and loading operations for such materials.

2.2 Control Technology Determination

- a.
  - i. Emissions of particulate matter from affected units, other than operations associated with material storage in building or associated with storage piles, shall be controlled with enclosures and aspiration to baghouses designed to emit no more than 0.005 grains/dry standard cubic foot (gr/dscf). These baghouses shall be operated in accordance with good air pollution control practice to minimize emissions.
  - ii. There shall be no visible fugitive emissions, as defined by 40 CFR 60.671, from storage buildings.
  - iii. Storage piles shall be controlled by enclosure, material quality, temporary covers and application of water or other dust suppressants so as to minimize fugitive emissions to the extent practicable.
- b.
  - i. The only fuel burned in the limestone drying mills shall be natural gas, as defined by 40 CFR 60.41a.
  - ii. Emissions from each limestone drying mill attributable to combustion of fuel shall not exceed the following limits, except during startup and shutdown. These limits shall apply as a 3-hour block average, with compliance determined in accordance with Condition 2.8 and proper operation.
    - A. NO<sub>x</sub> - 0.073 lb/million Btu.
    - B. CO - 0.20 lb/million Btu.
    - C. VOM - 0.02 lb/million Btu.

2.3 Applicable Federal Emission Standards

- a. Affected units engaged in handling limestone shall comply with applicable requirements of the NSPS for Nonmetallic Mineral Processing Plants, 40 CFR 60, Subpart 000 and related provisions of 40 CFR 60, Subpart A.
  - i. Pursuant to the NSPS, stack emissions of particulate matter are subject to the following limitations:
    - A. The rate of emissions shall not exceed 0.05 gram/dscm (0.02 g/dscf) (40 CFR 60.672(a)(1))

- B. The opacity of emissions shall not exceed 7 percent. (40 CFR 60.672(a)(2))
  - ii. Pursuant to the NSPS, fugitive emissions of particulate matter are subject to the following limitations:
    - A. The opacity of emissions from grinding mills, screens (except truck dumping), storage bins, and enclosed truck or railcar loading operations shall not exceed 10 percent. (40 CFR 60.672(b) and (d))
    - B. The opacity of emissions from crushers shall not exceed 10 percent. (40 CFR 60.672(c))
    - C. Truck dumping into any screening operation, feed hopper, or crusher is exempt from the above standards. (40 CFR 60.672(d))
- b. Affected units engaged in handling coal shall comply with applicable requirements of the NSPS for Coal Preparation Plants, 40 CFR 60, Subpart Y, and related provisions of 40 CFR 60, Subpart A. Note: These NSPS are applicable because coal will be processed at the plant by crushing.

Pursuant to the NSPS, the opacity of the exhaust from coal processing and conveying equipment, coal storage systems (other than open storage piles), and coal loading systems shall not exceed 20 percent.
- c. At all times, the Permittee shall maintain and operate affected units that are subject to NSPS, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions, pursuant to 40 CFR 60.11(d).
- d. This permit is issued based on the limestone drying systems not being subject to the NSPS for Calciners and Dryers in Mineral Industries, 40 CFR 60 Subpart UUU, because processing of limestone is not addressed by these standards.

#### 2.4 Applicable State Emission Standards

- a. The emission of smoke or other particulate matter from affected units shall not have an opacity greater than 30 percent, except as allowed by 35 IAC 212.124. Compliance with this limit shall be determined by 6-minute averages of opacity measurements in accordance with USEPA Reference Method 9. [35 IAC 212.109 and 212.123(a)]
- b. With respect to emissions of fugitive particulate matter, affected units shall comply with 35 IAC 212.301, which provides that visible emissions of fugitive particulate matter shall not be visible from any process, including any material handling or storage activity, when looking generally toward the zenith at a point beyond the property line of the source, except as provided by 35 IAC 212.314.

- c. Affected units shall comply with applicable emission standards for fugitive particulate matter, as follow, which generally apply to the source because it is located in Channahon Township, Will County.
  - i. Crushers, grinding mills, screening operations, conveyor transfer points, conveyors, bagging operations, storage bins, and fine product truck and railcar loading operations shall be sprayed with water or a surfactant solution, utilize choke-feeding, or be treated by an equivalent method of emission control [35 IAC 212.308]
  - ii. All unloading and transportation of materials collected by pollution control equipment shall be enclosed or shall utilize spraying, pelletizing, screw conveying or other equivalent methods [35 IAC 212.307].

## 2.5 Applicability of Other Regulations

- a. This permit is issued based on the outdoor storage piles at the plant not meeting the applicability thresholds of 35 IAC 212.304, so that the provisions of 35 IAC 212.304, 212.305, and 212.306 are not applicable.
- b. This permit is issued based on affected units readily complying with the applicable particulate matter emission limit pursuant to 35 IAC 212.321, which rule limits emissions based on the process weight rate of an unit and allows a minimum emission rate emission of 0.55 lb/hour for any unit.

## 2.6 Operating Requirements

- a. The plant shall be designed and operated to store bulk materials that have the potential for particulate matter emissions in silos, bins, and buildings, without storage of such material in outdoor piles except on a temporary basis during breakdown or other disruption in the capabilities of the enclosed storage facilities.
- b.
  - i. The Permittee shall carry out control of fugitive particulate matter emissions from affected units in accordance with a written operating program describing the measures being implemented in accordance with Conditions 2.2 and 2.4 to control emissions at each area of the plant with the potential to generate significant quantities of such emissions, which program shall be kept current.
    - A. This program shall include maps or diagrams indicating the location of affected units with the potential for fugitive emissions, accompanied the following information for each such unit: a general description of the unit, its size (area or volume), the expected level of activity, the nature and extent of enclosure, and a description of installed air pollution control equipment.
    - B. This program shall include a detailed description of any additional emission control technique (e.g., water or surfactant spray) including: typical flow of water and additive

concentration; rate or normal frequency at which measures would be implemented; circumstances in which the measure would not be implemented e.g., adequate surface moisture on material; triggers for additional control, e.g. observation of 10 percent opacity; and calculated control efficiency.

- C. This program shall also meet any further requirements of 35 IAC 212.309 and 212.310 for affected units subject to 35 IAC 212.307 or 212.308 (Condition 2.4).
- ii. The Permittee shall submit copies of this operating program to the Illinois EPA for review as follows:
  - A. A program for the construction of the plant shall be submitted with 30 days of beginning actual construction of the source.
  - B. The initial operating program for plant shall be submitted within 90 days of initial start up of the plant.
  - C. Significant amendments to the program by the Permittee shall be submitted within 30 days.
- iii. A revised operating program shall be submitted to the Illinois EPA for review within 90 days of a request from the Illinois EPA for revision to address observed deficiencies in control of fugitive emissions.
- c. i. The only fuel used for affected units shall be natural gas.
- ii. The rated heat input capacity of affected units shall not exceed 36 million Btu/hour, total.

## 2.7 Emission Limitations

Emissions from affected units shall not exceed the limitations in Table II and III and the limitations specified in the records required by Condition 2.11(a).

## 2.8 Emission Testing

- a. i. A. Within 60 days after achieving the maximum production rate at which a limestone drying mill or other affected emission unit subject to NSPS will be operated but not later than 180 days after initial startup of each such unit, the Permittee shall have emissions tests conducted as follows for such unit below by an approved testing service at its expense under conditions that are representative of maximum emissions.
- B. This period of time may be extended by the Illinois EPA upon written request by the Permittee as needed to reasonably accommodate unforeseen difficulties in the startup and testing of an affected unit, provided that initial emissions testing required by the NSPS has been completed for the unit and the test report submitted to the Illinois EPA.

- ii. In addition to the initial emission testing required above, the Permittee shall perform emission tests as requested by the Illinois EPA for an affected unit within 45 days of a written request by the Illinois EPA or such later date agreed to by the Illinois EPA.

b. The following methods and procedures shall be used for emission testing

- i. The following USEPA methods and procedures shall be used for particulate matter and opacity measurements for the affected units subject to 40 CFR Part 60, Subpart 000, as specified in 40 CFR 60.675:

Particulate Matter	Method 5 or 17
Opacity	Method 9

- ii. The following USEPA methods and procedures shall be used for particulate matter and opacity measurements for the affected units subject to 40 CFR 60, Subpart Y, as specified in 40 CFR 60.254:

Particulate matter - Method 5, the sampling time and sample volume for each run shall be at least 60 minutes and 30 dscf. Sampling shall begin no less than 30 minutes after startup and shall terminate before shutdown procedures begin.

Opacity - Method 9, opacity measurements shall be performed by a certified observer.

- iii. The following USEPA methods and procedures shall be used for testing the combustion emissions of one randomly selected limestone mill:

Nitrogen Oxides	Method 19
Carbon Monoxide	Method 10
Volatile Organic Material	Method 18 or 25A

- c. Test plan(s), test notifications, and test reports shall be submitted to the Illinois EPA in accordance with General Condition 2. (Section 6, Condition 2)

2.9 Emission Monitoring

None

2.10 Operational Monitoring and Measurements

- a. The Permittee shall install, operate and maintain systems to measure the pressure drop across the baghouse associated with each limestone mill.
- b. The Permittee shall maintain the records of the measurements made by these systems and records of maintenance and operational activity associated with the systems.

2.11 Recordkeeping

- a. The Permittee shall maintain files, which shall be kept current, that contain:

- i. For the baghouses associated with affected units, design specifications for each baghouse (type of baghouse, maximum design exhaust flow (acfm or scfm), filter area, type of bag cleaning, performance guarantee for particulate exhaust loading in gr/scf, etc.), the manufacturer's recommended operating and maintenance procedures for the baghouse, and design specification for the filter material in each baghouse (type of material, surface treatment(s) applied to material, weight, performance guarantee, warranty provisions, etc.).
  - ii. For each baghouse associated with a limestone mill, the normal range of pressure drop across the device and the minimum and maximum safe pressure drop for the device, with supporting documentation.
  - iii. The designated particulate matter emission rate, in pounds/hour, from each stack or vent associated with the affected units, other than those units individually addressed by Table III. For each category of affected unit (e.g., receiving and handling), the sum of these emission rates and the hourly limitations for any units that are addressed individually shall not exceed the hourly subtotal in Table III for the category of affected unit. (See also Condition 2.
- b. i. The Permittee shall keep records for the amount of each bulk material received by or shipped from the plant (tons/month).
- ii. The Permittee shall keep records for any incident in bulk materials were deposited outside of a building, with detailed explanation and a description of the practices used to minimize emissions.
- c. For affected units that are subject to NSPS, the Permittee shall fulfill applicable recordkeeping requirements of the NSPS, 40 CFR 60.676
- d. The Permittee shall keep inspection and maintenance logs for each control device associated with an affected unit.
- e. The Permittee shall maintain records documenting implementation of the fugitive emission operating program required by Condition 2.6, including:
- i. Records for inspections to verify the implementation of continuous control measures (that are to be in place whenever an affected unit is in operation), including the date and time, the name of the responsible party, identification of the affected unit(s) that were inspected, and the observed condition of control measures;
  - ii. Records for the implementation of intermittent control measures, i.e., application of suppressants including identification of the affected unit, identification of the suppressant, application rate, dates or date and time of applications, and quantity of total suppressant applied;

- iii. Records for application of physical or chemical control agents other than water including the name of the agent; target application concentration, if diluted with water; target application rate; and usage of the agent, gallons/month; and
  - iv. A log recording incidents when control measures were not present or were not used for an affected unit when it was in operation, including description, date, duration, and a statement of explanation.
- f. The Permittee shall record any period during which an affected unit was in operation when its baghouse was not in operation or was not operating properly, as follows:
- i. Each period when the pressure drop of a baghouse for a limestone drying system, as measured pursuant to Condition 2.9, deviated outside the levels set as good air pollution control practice (date, duration and description of the event).
  - ii. Each period when a baghouse failed to operate properly, which records shall include at least the information specified by General Condition 3 (Section 6, Condition 3).
  - iii. Each period during which an affected unit exceeded the requirements of this permit, including applicable emission limits, which records shall include at least the information specified by General Condition 3 (Section 6, Condition 3).
- g. The Permittee shall maintain the following records for the emissions of the affected units:
- i. Records of emissions of particulate matter based on operating data for the unit(s) and appropriate emission factors, with supporting documentation.
  - ii. Records of emissions of emissions of NO<sub>x</sub>, CO and VOM from affected units drying limestone based on fuel usage, operating data and appropriate emission factors, with supporting documentation.

## 2.12 Notifications

The Permittee shall notify the Illinois EPA within 30 days of deviations from applicable emission standards or operating requirements that continue\* for more than 24 hours. These notifications shall include the information specified by General Condition 5 (Section 6, Condition 5).

\* For this purpose, time shall be measured from the start of a particular event. The absence of a deviation for a short period shall not be considered to end the event if the deviation resumes. In such circumstances, the event shall be considered to continue until corrective actions are taken so that the deviation ceases or the Permittee takes the affected unit out of service for repairs.



#### 2.13 Reporting

- a. The Permittee shall submit quarterly reports to the Illinois EPA for all deviations from emission standards, including standards for visible emissions and opacity, and operating requirements set by this permit. These notifications shall include the information specified by General Condition 5 (Section 6, Condition 5)
- b. These reports shall also address any deviations from applicable compliance procedures established by this permit for affected units.

#### 2.14 Operating Flexibility

The Permittee is authorized to construct and operate affected units that are different from those described in the application as follows without obtaining prior approval by the Illinois EPA. This condition does not affect the Permittee's obligation to comply with the applicable requirements for affected units:

- a. This authorization only extends to changes that result from the detailed design of the plant and any refinements to that design that occur during construction and the initial operation of the plant.
- b. With respect to air quality impacts, these changes shall generally act to improve dispersion and reduce impacts, as emissions from individual units are lowered, units are moved apart or away from the fence line, stack heights are increased, and heights of nearby structures is reduced.
- c. The Permittee shall notify the Illinois EPA prior to proceeding with any changes. In this notification, the Permittee shall describe the proposed changes and explain why the proposed changes will act to reduce impacts, with detailed supporting documentation.
- d. Upon written request by the Illinois EPA, the Permittee shall promptly have dispersion modeling performed to demonstrate that the overall effect of the changes is to reduce air quality impacts, so that impacts from affected units remain at or below those predicted by the air quality analysis accompanying the application.

UNIT-SPECIFIC CONDITION 3: CONDITIONS FOR COOLING TOWERS

3.1 Description of Emission Units

The affected units for the purpose of these unit-specific conditions are the two cooling towers associated with the steam cycle for each CFB boiler. The cooling towers are sources of particulate matter because of mineral material present in the water.

3.2 Control Technology Determination

The affected units shall be equipped, operated, and maintained with drift eliminators designed to limit the loss of water droplets from the unit to not more than 0.0005 percent of the circulating water flow.

3.2 Applicable Federal Emission Standards

None

3.4 Applicable State Emission Standards

Visible emission of fugitive particulate matter from the affected units shall comply with the provisions of 35 IAC 212.301, which provides that visible emissions of fugitive particulate matter shall not be visible from any process, including any material handling or storage activity, when looking generally toward the zenith at a point beyond the property line of the source, except as provided by 35 IAC 212.314.

3.5 Applicability of Other Regulations

None

3.6 Operating Requirements

The Permittee shall maintain the drift eliminators in the affected units in a manner consistent with good air pollution control practice for minimizing emissions

3.7 Emission Limitations

This permit is issued based on annual emissions of 8.4 tons of particulate matter from the affected units.

3.8 Emission Testing

None

3.9 Emission Monitoring

None

### 3.10 Operational Monitoring and Measurements

None

### 3.11 Records

- a. The Permittee shall keep a file that contains:
  - i. The design loss specification for the drift eliminators installed in each affected unit.
  - ii. The suppliers recommended procedures for inspection and maintenance of the drift eliminators.
- b. The Permittee shall maintain records for the particulate matter emissions of the affected units based on operating data for the unit(s) and appropriate emission factors, with supporting documentation.

### 3.12 Notifications

The Permittee shall notify the Illinois EPA within 30 days of deviations from applicable requirements by an affected unit. These notifications shall include the information specified by General Condition 4 (Section 6, Condition 4).

UNIT-SPECIFIC CONDITION 4: CONDITIONS FOR THE AUXILIARY BOILER

4.1 Description of Emission Unit

The affected unit for the purpose of these unit-specific conditions is the auxiliary boiler for the plant, which is fired with natural gas. The auxiliary boiler is used to produce low-pressure steam to maintain the plant when the coal-fired boilers are not in operation and support the startup of the coal-fired boilers.

4.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
Boiler	Natural gas-fired boiler, with rated heat input capacity of no more than 99 million Btu/hr	Low-NO <sub>x</sub> Burner

4.2 Control Technology Determination

- a. The only fuel burned in the affected boiler shall be natural gas.
- b. The emissions from the boiler shall not exceed the following limits except during startup, shutdown and malfunction as addressed by Condition 1.2(c).
  - i. NO<sub>x</sub> - 0.08 lb/million Btu.  
  
This limit shall apply as a 3-hour block average, with compliance determined by emission testing in accordance with Condition 4.8 and proper operation.
  - ii. CO - 0.1 lb/million Btu.  
  
This limit shall apply as a 3-hour block average, with compliance determined by emission testing in accordance with Condition 4.8 and proper operation.
  - iii. VOM - 0.02 lb/million.  
  
This limit shall apply as a 3-hour block average, with compliance determined by emission testing in accordance with Condition 4.8 and proper operation.
- c. The Permittee shall use reasonable practices to minimize emissions during startup, shutdown and malfunction of the affected boiler, including:
  - i. Operation of the boiler and associated air pollution control equipment in accordance with written operating procedures that include startup, shutdown and malfunction plan(s); and
  - ii. Inspection, maintenance and repair of the boiler and associated air pollution control equipment in accordance with written maintenance procedures.

#### 4.3 Applicable Federal Emission Standards

- a. The affected boiler is subject to a New Source Performance Standard (NSPS) for Small Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60, Subpart Dc, and related provisions in Subpart A.
- b. At all times, the Permittee shall maintain and operate the affected boiler, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions, pursuant to 40 CFR 60.11(d).
- c. This permit is issued based on the affected boiler not being subject to emission limits under the NSPS for because the boiler does not burn oil or solid fuel.

#### 4.4 Applicable State Emission Standards

- a. The emission of smoke or other particulate matter from the affected boiler shall not have an opacity greater than 30 percent, except as allowed by 35 IAC 212.124. Compliance with this limit shall be determined by 6-minute averages of opacity measurements in accordance with USEPA Reference Method 9. [35 IAC 212.109 and 212.123(a)]
- b. The emission of carbon monoxide (CO) into the atmosphere from the affected boiler shall not exceed 200 ppm, corrected to 50 percent excess air. [35 IAC 216.121]

#### 4.5 Applicability of Regulations of Concern

This permit is issued on the affected boiler not being an electrical generating unit, so that provisions of the federal Acid Rain Program are not applicable to the boiler.

#### 4.6 Operating Requirements

- a. The affected boiler shall only be fired with natural gas.
- b. The affected boiler shall not operate for more than 2500 hours per year when a coal-fired boiler is in operation.
- c. The rated heat input of the affected boiler shall not exceed 99 million Btu/hour.

#### 4.7 Emission Limitations

Emissions of NO<sub>x</sub>, VOM, CO, PM and SO<sub>2</sub> from the affected boiler shall not exceed 9.9, 2.5, 12.4, 1.2 and 0.7 tons/year, respectively. Compliance with these annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months.

#### 4.8 Emission Testing

- a.
  - i. Within 60 days after achieving the maximum production rate at which the affected boiler will be operated but not later than 180 days after initial startup of the boiler, the Permittee shall have tests conducted for opacity and emissions of NO<sub>x</sub> and VOC as follows at its expense by an approved testing service while the boiler is operating at maximum operating load and other representative operating conditions.
  - ii. In addition to the emission testing required above, the Permittee shall perform emission tests as requested by the Illinois EPA for the affected boiler within 45 days of a written request by the Illinois EPA or such later date agreed to by the Illinois EPA.
- b. The following methods and procedures shall be used for testing, unless otherwise specified or approved by the Illinois EPA.

Opacity	Method 9
Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3 or 3A
Moisture	Method 4
Nitrogen Oxides <sup>1</sup>	Method 7, 7E or 19 as specified in 40 CFR 60.48b
Carbon Monoxide	Method 10
Volatile Organic Compounds	Method 25A and 18
- c. Test plans, test notifications, and test reports shall be submitted to the Illinois EPA in accordance with the General Condition 2 (Section 6, Conditions 2)

#### 4.9 Operational Monitoring and Measurements

None

#### 4.10 Emission Monitoring

None

#### 4.11 Recordkeeping

- a. The Permittee shall maintain the following operating records for the affected boiler:
  - i. Operating hours; and
  - ii. Natural gas usage on a monthly basis (ft<sup>3</sup>).
- b. The Permittee shall maintain a maintenance and repair log for the affected boiler.

- c. The Permittee shall keep records of the annual NO<sub>x</sub>, VOM, CO, PM and SO<sub>2</sub> emissions from the affected boiler, based on fuel consumption, operating data, and applicable emission factors, with supporting calculations.

#### 4.12 Notifications

The Permittee shall notify the Illinois EPA within 30 days of deviations from applicable requirements. These notifications shall include the information specified by General Condition 4 (Section 6, Condition 4).

#### 4.13 Reporting

The Permittee shall fulfill applicable reporting requirements of the NSPS, 40 CFR 60.49b, for the affected boiler by sending the following notifications and reports to the Illinois EPA:

- a. The Permittee shall submit notification of the date of initial startup of the boiler, as provided by 40 CFR 60.7. This notification shall include: (1) the design heat input of the boiler, and (2) the annual capacity factor at which the Permittee anticipates operating the boiler. [40 CFR 60.49c(a)]

#### 4.14 Operational Flexibility/Anticipated Operating Scenarios

None

#### 4.15 Compliance Procedures

Compliance with the emission limits in Condition 4.7 shall be based on the operating records required by Condition 4.11 and appropriate emission factors.

- a. The emission factors for NO<sub>x</sub>, CO, and VOM shall be based on the results of the emission testing required by Condition 4.8.
- b. The following emission factors may be used for PM and SO<sub>2</sub> when the affected boiler operates properly. These are the emission factors for small natural gas fired boilers from USEPA's *Compilation of Air Pollutant Emission Factors*, AP-42, October 1996.

Emission Factor	
<u>Pollutant</u>	<u>(lb/million ft<sup>3</sup>)</u>
PM	3.0
SO <sub>2</sub>	0.6

UNIT-SPECIFIC CONDITION 5: CONDITIONS FOR ROADWAYS AND OTHER OPEN AREAS

5.1 Description of Emission Units

The affected units for the purpose of these unit-specific conditions are roadways, parking areas and open areas at the plant, which may be sources of fugitive particulate matter.

5.2 Control Technology Determination

Good air pollution control practices shall be implemented to minimize and significantly reduce nuisance dust from affected units. After construction of the plant is complete, these practices shall provide for pavement on all regularly traveled roads and treatment (flushing, vacuuming, dust suppressant application, etc.) of paved and unpaved roads and areas that are routinely subject to vehicle traffic for very effective and effective control of dust, respectively (nominal 90 percent for paved roads and areas and 80 percent control for unpaved roads and areas).

5.3 Applicable Federal Emission Standards

None

5.4 Applicable State Emission Standards

- a. Affected units shall comply with 35 IAC 212.301, which provides that visible emissions of fugitive particulate matter shall not be visible from any process, including any material handling or storage activity, when looking generally toward the zenith at a point beyond the property line of the source, except as provided by 35 IAC 212.314.
- b. The handling of material collected from affected unit by sweeping or vacuuming trucks shall comply with 35 IAC 212.307, which provides that all unloading and transportation of materials collected by pollution control equipment shall be enclosed or shall utilize spraying, pelletizing, screw conveying or other equivalent methods [35 IAC 212.307].

5.5 Applicability of Other Regulations

This permit is issued based on the source being a power plant or electrical generating operation so that the provisions of 35 IAC 212.306 are not applicable to roads and parking areas at the source. [35 IAC 212.306]

5.6 Operating Requirements

- a. The Permittee shall carry out control of fugitive particulate matter emissions from affected units in accordance with a written operating program describing the measures being implemented in accordance with Conditions 5.2 and 5.4 to control emissions at each unit with the potential to generate significant quantities of such emissions, which program shall be kept current.



- i. This program shall include maps or diagrams indicating the location of affected units with the potential to generate significant quantities of fugitive particulate matter, with description of the unit (length, width, surface material, etc.) and volume and nature of expected vehicle traffic or other activity on such unit.
  - ii. This program shall include a detailed description of the emissions control technique (e.g., vacuum truck, water flushing, or sweeping) for the affected unit, including: typical application rate; type and concentration of additives; normal frequency with which measures would be implemented; circumstances, in which the measure would not be implemented, e.g., recent precipitation; triggers for additional control, e.g. observation of 10 percent opacity; and calculated control efficiency for particulate matter emissions.
- b. The Permittee shall submit copies of this operating program to the Illinois EPA for review as follows:
  - i. A program addressing the construction of the plant shall be submitted within 30 days of beginning actual construction of the source.
  - ii. A program addressing the operation of the plant shall be submitted within 90 days of initial start up of the plant.
  - iii. Significant amendments to the program by the Permittee shall be submitted within 30 days.
- c. A revised operating program shall be submitted to the Illinois EPA for review within 90 days of a request from the Illinois EPA for revision to address observed deficiencies in control of fugitive particulate emissions.

#### 5.7 Emission Limitations

This permit is issued based on annual emissions of 5.5 tons of particulate matter from affected units.

#### 5.8 Emission Testing

None

#### 5.9 Operational Monitoring and Measurements

None

#### 5.10 Emission Monitoring

None

#### 5.11 Records

- a. The Permittee shall maintain records documenting implementation of the operating program required by Condition 5.6, including:

- i. For each treatment of an affected unit or units, the name and location of the affected unit(s), the date and time, and the identification of the truck(s) or treatment equipment used;
  - ii. For each application of water or chemical solution by truck: application rate of water or suppressant, frequency of each application, width of each application, total quantity of water or chemical used for each application and, for each application of chemical solution, the concentration and identity of the chemical;
  - iii. For application of physical or chemical control agents: the name of the agent, application rate and frequency, and total quantity of agent and, if diluted, percent of concentration, used each day; and
  - iv. A log recording incidents when control measures were not used, including description, date and a statement of explanation.
- b. The Permittee shall maintain the following records for the particulate matter emissions of the affected units based on plant operating data for the unit(s), data for implementation of the operating program, and appropriate emission factors, with supporting documentation.

#### 5.12 Notifications

The Permittee shall notify the Illinois EPA within 30 days of deviations from applicable requirements for affected units that are not addressed by the regular reporting required below. These notifications shall include the information specified by General Condition 4 (Section 6, Condition 4).

#### 5.13 Reporting

The Permittee shall submit a quarterly report to the Illinois EPA for affected units stating the following: the dates any necessary control measures were not implemented, a listing of those control measures, the reasons that the control measures were not implemented, and any corrective actions taken. This information includes, but is not limited to, those dates when controls were not applied based on a belief that application of such control measures would have been unreasonable given prevailing atmospheric conditions. This report shall be submitted to the Illinois EPA no later than 45 calendar days from the end of each calendar quarter.

SECTION 5: TRADING PROGRAM CONDITIONS

TRADING PROGRAM CONDITION 1: ACID RAIN PROGRAM REQUIREMENTS

a. Applicability

Under Title IV of the Clean Air Act, Acid Deposition Control, this plant or source is an affected source and the following emission units at the source are affected units for acid deposition:

Circulating Fluidized Bed Boilers 1 and 2

Note: Title IV of the Clean Air Act, and other laws and regulations promulgated thereunder, establish requirements for affected sources related to control of emissions of pollutants that contribute to acid rain. For purposes of this permit, these requirements are referred to as Title IV provisions.

b. Applicable Emission Requirements

The owners and operators of the source shall not violate applicable Title IV provisions. In particular, SO<sub>2</sub> emissions of the affected units shall not exceed any allowances that the source lawfully holds under Title IV provisions. [Environmental Protection Act, Sections 39.5(7)(g) and (17)(1)]

Note: Affected sources must hold SO<sub>2</sub> allowances to account for the SO<sub>2</sub> emissions from affected units at the source that are subject to Title IV provisions. Each allowance is a limited authorization to emit up to one ton of SO<sub>2</sub> emissions during or after a specified calendar year. The possession of allowances does not authorize exceedances of applicable emission standards or violations of ambient air quality standards.

c. Monitoring, Recordkeeping and Reporting

The owners and operators of the source and, to the extent applicable, their designated representative, shall comply with applicable requirements for monitoring, recordkeeping and reporting specified by Title IV provisions, including 40 CFR Part 75. [Environmental Protection Act, Sections 39.5(7)(b) and 17(m)]

Note: As already addressed in Unit-Specific Condition 1, the following emission determination methods would be used for the affected units at this source.

NO<sub>x</sub>: Continuous emissions monitoring (40 CFR 75.12)  
SO<sub>2</sub>: Continuous emissions monitoring (40 CFR 75.11)  
Opacity: Continuous emission monitoring (40 CFR 75.14)  
O<sub>2</sub>/CO<sub>2</sub>: Continuous monitoring for oxygen or carbon dioxide (40 CFR 75.13)

d. Acid Rain Permit

The owners and operators of the source shall comply with the terms and conditions of the source's Acid Rain permit. [Environmental Protection Act, Section 39.5(17)(1)]

Note: The source is subject to an Acid Rain permit, which was issued pursuant to Title IV provisions, including Section 39.5(17) of the Act. Affected sources must be operated in compliance with their Acid Rain permits. The initial Acid Rain permit is included as an attachment to this permit. Revisions and modifications of this Acid Rain permit, including administrative amendments and automatic amendments (pursuant to Sections 408(b) and 403(d) of the CAA or regulations thereunder) are governed by Title IV provisions, as provided by Section 39.5(13) (e) of the Environmental Protection Act, and revision or renewal of the Acid Rain permit may be handled separately from this permit.

e. Coordination with Other Requirements

- i. This permit does not contain any conditions that are intended to interfere with or modify the requirements of Title IV provisions. In particular, this permit does not restrict the flexibility under Title IV provisions of the owners and operators of this source to amend their Acid Rain compliance plan. [Environmental Protection Act, Section 39.5(17) (h)]
- ii. Where another applicable requirement of this permit is more stringent than an applicable requirement of Title IV provisions, both requirements are enforceable and the owners and operators of the source shall comply with both requirements. [Environmental Protection Act, Section 39.5(7) (h)]

TRADING PROGRAM CONDITION 2: EMISSIONS REDUCTION MARKET SYSTEM (ERMS)

a. Description of ERMS

The ERMS is a "cap and trade" market system for major stationary sources located in the Chicago ozone nonattainment area. It is designed to reduce VOM emissions from stationary sources to contribute to reasonable further progress toward attainment, as required by Section 182(c) of the CAA.

The ERMS addresses VOM emissions during a seasonal allotment period from May 1 through September 30. Participating sources must hold "allotment trading units" (ATUs) for their actual seasonal VOM emissions. Each year participating sources are issued ATUs based on allotments set in the sources' CAAPP permits. These allotments are established from historical VOM emissions or "baseline emissions" lowered to provide the emissions reductions from stationary sources required for reasonable further progress.

By December 31 of each year, the end of the reconciliation period following the seasonal allotment period, each source shall have sufficient ATUs in its transaction account to cover its actual VOM emissions during the preceding season. A transaction account's balance as of December 31 will include any valid ATU transfer agreements entered into as of December 31 of the given year, provided such agreements are promptly submitted to the Illinois EPA for entry into the transaction account database. The Illinois EPA will then retire ATUs in sources' transaction accounts in amounts equivalent to their seasonal emissions. When a source does not appear to have sufficient ATUs in its transaction account, the Illinois EPA will issue a notice to the source to begin the process for Emissions Excursion Compensation.

In addition to receiving ATUs pursuant to their allotments, participating sources may also obtain ATUs from the market, including ATUs bought from other participating sources and general participants in the ERMS that hold ATUs (35 IAC 205.630). During the reconciliation period, sources may also buy ATUs from a secondary reserve of ATUs managed by the Illinois EPA, the "Alternative Compliance Market Account" (ACMA) (35 IAC 205.710). Sources may also transfer or sell the ATUs that they hold to other participants (35 IAC 205.630).

b. Applicability

This plant or source is considered a "new participating source" for purposes of the ERMS, 35 IAC Part 205.

c. Obligation to Hold Allotment Trading Units (ATUs)

In accordance with 35 IAC 205.150(d)(1), at the end of the reconciliation period each year, once the source commences operation, the source shall hold ATUs in an amount not less than 1.3 times its VOM emissions during the preceding seasonal allotment period (May 1 through September 30), determined in accordance with applicable provisions in Section 3 of this permit or the source's CAAPP permit, not including VOM emissions from the following, or the source shall be subject to "emissions excursion compensation," as described in Condition 2(e):

- i. VOM emissions from insignificant emission units, if any, as identified in the source's CAAPP permit, in accordance with 35 IAC 205.220;
- ii. Excess VOM emissions associated with startup, malfunction, or breakdown of an emission unit as authorized by 35 IAC 201.262, if any, in accordance with 35 IAC 205.225;
- iii. Excess VOM emissions that are a consequence of an emergency at the source as approved by the Illinois EPA, in accordance with 35 IAC 205.750; and
- iv. Excess VOM emissions to the extent allowed by a Variance, Consent Order, or Compliance Schedule, in accordance with 35 IAC 205.320(e)(3).

d. Market Transactions

- i. The source shall apply to the Illinois EPA for and obtain authorization for a Transaction Account prior to conducting any market transactions, as specified at 35 IAC 205.610(a).
- ii. The source shall promptly submit to the Illinois EPA any revisions to the information submitted for its Transaction Account, pursuant to 35 IAC 205.610(b).
- iii. The source shall have at least one account officer designated for its Transaction Account, pursuant to 35 IAC 205.620(a).
- iv. Any transfer of ATUs to or from the source from another source or general participant must be authorized by a qualified Account Officer designated by the source and approved by the Illinois EPA, in accordance with 35 IAC 205.620, and the transfer must be submitted to the Illinois EPA for entry into the Transaction Account database.

e. Emissions Excursion Compensation

Pursuant to 35 IAC 205.720, if the source fails to hold ATUs in accordance with Condition 2(c), it shall provide emissions excursion compensation in accordance with the following:

- i. Upon receipt of an Excursion Compensation Notice issued by the Illinois EPA, the source shall purchase ATUs from the ACMA in the amount specified by the notice, as follows:
  - A. The purchase of ATUs shall be in an amount equivalent to 1.2 times the emissions excursion; or
  - B. If the source had an emissions excursion for the seasonal allotment period immediately before the period for the present emissions excursion, the source shall purchase ATUs in an amount equivalent to 1.5 times the emissions excursion.
- ii. If requested in accordance with Condition 2(e)(iii) below or in the event that the ACMA balance is not adequate to cover the total emissions excursion amount, the Illinois EPA will deduct ATUs equivalent to the specified amount or any remaining portion thereof from the ATUs issued to the source for the next seasonal allotment period.
- iii. Pursuant to 35 IAC 205.720(c), within 15 days after receipt of an Excursion Compensation Notice, the owner or operator may request that ATUs equivalent to the amount specified be deducted from the source's next seasonal allotment by the Illinois EPA, rather than purchased from the ACMA.

f. Quantification of Seasonal VOM Emissions

- i. The methods and procedures specified in Sections 4 of this permit (Unit-Specific Conditions) or the CAAPP permit for the source shall be used for determining seasonal VOM emissions for purposes of the ERMS.
- ii. The Permittee shall report emergency conditions at the source to the Illinois EPA, in accordance with 35 IAC 205.750, if the Permittee intends to deduct VOM emissions that are in excess of a technology-based VOM emission rate normally achieved and are attributable to the emergency from the source's seasonal VOM emissions for purposes of the ERMS. These reports shall include the information specified by 35 IAC 205.750(a), and shall be submitted in accordance with the following:
  - A. An initial emergency conditions report within two days after the time when such excess emissions occurred due to the emergency; and
  - B. A final emergency conditions report, if needed to supplement the initial report, within 10 days after the conclusion of the emergency.

g. Annual Account Reporting

- i. For each year in which the source is operational, the Permittee shall submit, as a component of its Annual Emissions Report, seasonal VOM emissions information to the Illinois EPA for the seasonal allotment period. This report shall include the following information [35 IAC 205.300]:
  - A. Actual seasonal emissions of VOM from the source;
  - B. A description of the methods and practices used to determine VOM emissions, as required by this permit, including any supporting documentation and calculations;
  - C. A detailed description of any monitoring methods that differ from the methods specified in this permit, as provided in 35 IAC 205.337;
  - D. If the source has experienced an emergency, as provided in 35 IAC 205.750, the report shall reference the associated emergency conditions report that has been approved by the Illinois EPA;
- ii. This report shall be submitted by October 31 of each year, for the preceding seasonal allotment period.

h. Allotment of ATUs to the Source

- i. As a new participating source, the source will not receive allotments of ATUs from the State of Illinois.
- ii.
  - A. If the source enters into a multiple season transfer agreement with another participating source or a general participant in the ERMS, ATUs will be issued to the source's Transaction Account by the Illinois EPA annually for the duration of such agreement. These ATUs will be valid for the seasonal allotment period for which they are issued and, if not retired for this period, the next seasonal allotment period.
  - B. Notwithstanding the above, part or all of the above ATUs will not be issued to the source in circumstances as set forth in 35 IAC Part 205, including:
    1. Transfer of ATUs by the source to another participant or the ACMA, in accordance with 35 IAC 205.630;
    2. Deduction of ATUs as a consequence of emissions excursion compensation, in accordance with 35 IAC 205.720.

i. Recordkeeping for ERMS

- i. The Permittee shall maintain the following records related to actual VOM emissions of the source during the seasonal allotment period:
  - A. Records of operating data and other information for each individual emission unit or group of related emission units at the source, as

specified in Section 4 of this permit and in the source's CAAPP permit, as appropriate, to determine actual VOM emissions during the seasonal allotment period;

- B. Records of the VOM emissions, in tons, during the seasonal allotment period, with supporting calculations, for each individual emission unit or group of related emission units at the source, determined in accordance with the procedures specified in Section 4 of this permit and in the source's CAAPP permit; and
  - C. Total VOM emissions from the source, in tons, during each seasonal allotment period, which shall be compiled by October 31, of each year.
- ii. The Permittee shall maintain copies of the following documents as its Compliance Master File for purposes of the ERMS [35 IAC 205.335 and 205.700(a)]:
- A. Seasonal component of the Annual Emissions Report;
  - B. Information on actual VOM emissions, as specified in detail in Section 4 of this permit and in the source's CAAPP permits; and
  - C. Any transfer agreements for the purchase or sale of ATUs and other documentation associated with the transfer of ATUs.

#### TRADING PROGRAM CONDITION 3: NO<sub>x</sub> TRADING PROGRAM

##### a. Description of NO<sub>x</sub> Trading Program

The NO<sub>x</sub> Trading Program is a regional "cap and trade" market system for large sources of NO<sub>x</sub> emissions in the eastern United States, including Illinois. It is designed to reduce and maintain NO<sub>x</sub> emissions from the emission units covered by the program within a budget to help contribute to attainment and maintenance of the ozone ambient air quality standard in the multi-state region covered by the program, as required by Section 126 of the CAA. The NO<sub>x</sub> Trading Program applies in addition to other applicable requirements for NO<sub>x</sub> emissions and in no way relaxes these other requirements.

Electrical generating units (EGU) that are subject to the NO<sub>x</sub> Trading Program are referred to as "budget EGU." Sources that have one or more EGU or other units subject to the NO<sub>x</sub> Trading Program are referred to as budget sources.

The NO<sub>x</sub> Trading Program controls NO<sub>x</sub> emissions from budget EGU and other budget units during a seasonal control period from May 1 through September 30 of each year, when weather conditions are conducive to formation of ozone in the ambient air. (In 2004, the first year that the NO<sub>x</sub> Trading Program is in effect, the control period will be May 31 through September 30.) By November 30 of each year, the allowance transfer deadline, each budget source must hold "NO<sub>x</sub> allowances" for the actual NO<sub>x</sub> emissions of its budget units during the preceding control period. The USEPA will then retire NO<sub>x</sub> allowances in the source's accounts in amounts equivalent to its seasonal emissions. If a source does not have sufficient allowances in its accounts, USEPA would subtract allowances from the source's



future allocation for the next control period and impose other penalties as appropriate. Stringent monitoring procedures developed by USEPA apply to budget units to assure that NO<sub>x</sub> emissions are accurately determined.

The number of NO<sub>x</sub> allowances available for budget sources is set by the overall budget for NO<sub>x</sub> emissions established by USEPA. This budget requires a substantial reduction in NO<sub>x</sub> emissions from historical levels as necessary to meet air quality goals. In Illinois, existing budget sources initially receive their allocation or share of the NO<sub>x</sub> allowances budgeted for EGU in an amount determined by rule [35 IAC Part 217, Appendix F]. Between 2007 and 2011, the allocation mechanism for existing EGU gradually shifts to one based on the actual utilization of EGU in preceding control periods. New budget EGU, for which limited utilization data may be available, may obtain NO<sub>x</sub> allowances from the new source set-aside (NSSA), a portion of the overall budget reserved for new EGU.

In addition to directly receiving or purchasing NO<sub>x</sub> allowances as described above, budget sources may transfer NO<sub>x</sub> allowances from one of their units to another. They may also purchase allowances in the marketplace from other sources that are willing to sell some of the allowances that they have received. Each budget source must designate an account representative to handle all its allowance transactions. The USEPA, in a central national system, will maintain allowance accounts and record transfer of allowances among accounts.

The ability of sources to transfer allowances will serve to minimize the costs of reducing NO<sub>x</sub> emissions from budget units to comply with the overall NO<sub>x</sub> budget. In particular, the NO<sub>x</sub> emissions of budget units that may be most economically controlled will be targeted by sources for further control of emissions. This will result in a surplus of NO<sub>x</sub> allowances from those units that can be transferred to other units at which it is more difficult to control NO<sub>x</sub> emissions. Experience with reduction of SO<sub>2</sub> emissions under the federal Acid Rain program has shown that this type of trading program not only achieves regional emission reductions in a more cost-effective manner but also results in greater overall reductions than application of traditional emission standards to individual emission units.

The USEPA developed the plan for the NO<sub>x</sub> Trading Program with assistance from affected states. Illinois' rules for the NO<sub>x</sub> Trading Program for EGU are located in 35 IAC Part 217, Subpart W and have been approved by the USEPA. These rules provide for interstate trading, as mandated by Section 9.9 of the Act. Accordingly, these rules refer to and rely upon federal rules at 40 CFR Part 96, which have been developed by USEPA for certain aspects of the NO<sub>x</sub> Trading Program, and which an individual state must follow to allow for interstate trading of NO<sub>x</sub> allowances.

Note: This narrative description of the NO<sub>x</sub> Trading Program is for informational purposes only and is not enforceable.

b. Applicability

The following emission units at this source are budget EGU for purposes of the NO<sub>x</sub> Trading Program. Accordingly, this source is a budget source and the Permittee is the owner or operator of a budget source and budget EGU. In this condition, these emission units are addressed as budget EGU.

Boiler 1  
Boiler 2

c. General Provisions of the NO<sub>x</sub> Trading Program

- i. This source and the budget EGU at this source shall comply with all applicable requirements of Illinois' NO<sub>x</sub> Trading Program, i.e., 35 IAC Part 217, Subpart W, and 40 CFR Part 96 (excluding 40 CFR 96.4(b) and 96.55(c), and excluding 40 CFR 96, Subparts C, E and I), pursuant to 35 IAC 217.756(a) and 217.756(f) (2).
- ii. Any provision of the NO<sub>x</sub> Trading Program that applies to a budget source (including any provision applicable to the account representative of a budget source) shall also apply to the owner or operator of such budget sources and to the owner and operator of each budget EGU at the source, pursuant to 35 IAC 217.756(f) (3).
- iii. Any provision of the NO<sub>x</sub> Trading Program that applies to a budget EGU (including any provision applicable to the account representative of a budget EGU) shall also apply to the owner and operator of such budget EGU. Except with regard to requirements applicable to budget EGUs with a common stack under 40 CFR 96, Subpart H, the owner and operator and the account representative of one budget EGU shall not be liable for any violation by any other budget EGU of which they are not an owner or operator or the account representative, pursuant to 35 IAC 217.756(f) (4).

d. Requirements for NO<sub>x</sub> Allowances

- i. By November 30 of each year, the allowance transfer deadline, the account representative of each budget EGU at this source shall hold allowances available for compliance deduction under 40 CFR 96.54 in the budget EGU's compliance account or the source's overdraft account in an amount that shall not be less than the budget EGU's total tons of NO<sub>x</sub> emissions for the preceding control period, rounded to the nearest whole ton, as determined in accordance with 40 CFR 96, Subpart H, plus any number necessary to account for actual utilization (e.g., for testing, start-up, malfunction, and shut down under 40 CFR 96.42(e) for the control period, pursuant to 35 IAC 217.756(d) (1). For purposes of this requirement, an allowance may not be utilized for a control period in a year prior to the year for which the allowance is allocated, pursuant to 35 IAC 217.756(d) (5).
- ii. The account representative of a budget EGU that has excess emissions in any control period, i.e., NO<sub>x</sub> emissions in excess of the number of NO<sub>x</sub> allowances held as provided above, shall surrender the allowances as required for deduction under 40 CFR 96.54(d) (1), pursuant to 35 IAC 217.756(f) (5). In addition, the owner or operator of a budget EGU that has excess emissions shall pay any fine, penalty, or assessment, or comply with any other remedy imposed under 40 CFR 96.54(d) (3) and the Act, pursuant to 35 IAC 217.756(f) (6). Each ton of NO<sub>x</sub> emitted in excess of the number of NO<sub>x</sub> allowances held as provided above for each budget EGU for each control period shall constitute a separate violation of 35 IAC Part 217 and the Act, pursuant to 35 IAC 217.756(d) (2).

- iii. An allowance allocated by the Illinois EPA or USEPA under the NO<sub>x</sub> Trading Program is a limited authorization to emit one ton of NO<sub>x</sub> in accordance with the NO<sub>x</sub> Trading Program. As explained by 35 IAC 217.756(d) (6), no provision of the NO<sub>x</sub> Trading Program, the budget permit application, the budget permit, or a retired unit exemption under 40 CFR 96.5 and no provision of law shall be construed to limit the authority of the United States or the State of Illinois to terminate or limit this authorization. As further explained by 35 IAC 217.765(d) (7), an allowance allocated by the Illinois EPA or USEPA under the NO<sub>x</sub> Trading Program does not constitute a property right. As provided by 35 IAC 217.756(c) (4), allowances shall be held, deducted from, or transferred among allowance accounts in accordance with 35 IAC Part 217, Subpart W, and 40 CFR 96, Subparts F and G.

e. Monitoring Requirements for Budget EGU

- i. The Permittee shall comply with the monitoring requirements of 40 CFR Part 96, Subpart H, for each budget EGU and the compliance of each budget EGU with the emission limitation under Condition 3(d) (i) shall be determined by the emission measurements recorded and reported in accordance with 40 CFR 96, Subpart H, pursuant to 35 IAC 217.756(c) (1), (c) (2) and (d) (3).
- ii. The account representative for the source and each budget EGU at the source shall comply with those sections of the monitoring requirements of 40 CFR 96, Subpart H, applicable to an account representative, pursuant to 35 IAC 217.756(c) (1) and (d) (3).

f. Recordkeeping Requirements for Budget EGU

Unless otherwise provided below, the Permittee shall keep on site at the source each of the following documents for a period of at least 5 years from the date the document is created. This 5-year period may be extended for cause at any time prior to the end of the 5 years, in writing by the Illinois EPA or the USEPA.

- i. The account certificate of representation of the account representative for the source and each budget EGU at the source and all documents that demonstrate the truth of the statements in account certificate of representation, in accordance with 40 CFR 96.13, as provided by 35 IAC 217.756(e) (1) (A). These certificates and documents must be retained on site at the source for at least 5-years after they are superseded because of the submission of a new account certificate of representation changing the account representative.
- ii. All emissions monitoring information, in accordance with 40 CFR 96, Subpart H, (provided that to the extent that 40 CFR 96, Subpart H, provides for a 3-year period for retaining records, the 3-year period shall apply,) pursuant to 35 IAC 217.756(e) (1) (B).
- iii. Copies of all reports, compliance certifications, and other submissions and all records made or required under the NO<sub>x</sub> Trading Program or documents necessary to demonstrate compliance with requirements of the NO<sub>x</sub> Trading Program, pursuant to 35 IAC 217.756(e) (1) (C).

- iv. Copies of all documents used to complete a budget permit application and any other submission under the NO<sub>x</sub> Trading Program, pursuant to 35 IAC 217.756(e) (1) (D).

g. Reporting Requirements for Budget EGU

- i. The account representative for this source and each budget EGU at this source shall submit to the Illinois EPA and USEPA the reports and compliance certifications required under the NO<sub>x</sub> Trading Program, including those under 40 CFR 96, Subparts D and H and 35 IAC 217.774, pursuant to 35 IAC 217.756(e) (2).
- ii. These submittals need only be signed by the designated representative, who may serve in place of the responsible official for this purpose as provided by the Section 39.5(1) of the Act, and submittals to the Illinois EPA need only be made to the Illinois EPA, Bureau of Air, Compliance and Enforcement Section.

h. Allocation of NO<sub>x</sub> Allowances to Budget EGU

- i. For the first four control periods that a budget EGU identified in Condition 3(b) operates, it will not be entitled to direct allocations of NO<sub>x</sub> allowances because the EGU will be considered a "new" budget EGU, as defined in 35 IAC 217.768(a) (1).
- ii. A. Thereafter, the budget EGU will cease to be "new" budget EGU and the source will be entitled to an allocation of NO<sub>x</sub> allowances for the budget EGU as provided in 35 IAC 217.764. For example, for 2010, the allocation of NO<sub>x</sub> allowances would be governed by 35 IAC 217.764(e) (2) and (b) (4).
- B. In accordance with 35 IAC 217.762, the theoretical number of NO<sub>x</sub> allowances for these budget EGU, calculated as the product of the applicable NO<sub>x</sub> emissions rate and heat input as follows, shall be the basis for determining the allocation of NO<sub>x</sub> allowances to these EGU:
  - 1. As provided by 35 IAC 217.762(a) (2), the applicable NO<sub>x</sub> emission rates for these EGU is 0.010 lb/million Btu or such lower limit as set pursuant to Unit-Specific Condition 1.15. This is the permitted emission rates for these EGU as contained in Unit-Specific Condition 1.2(b) (iii). The permitted NO<sub>x</sub> emission rate is the applicable rate because it is between 0.15 lb/million Btu and 0.055 lb/million Btu, as provided by 35 IAC 217.762(a) (2).
  - 2. The applicable heat input (million Btu/control period) shall be the average of the two highest heat inputs from the control periods four to six years prior to the year for which the allocation is being made, as provided by 35 IAC 217.762(b) (1).

Note: If the start of the NO<sub>x</sub> Trading program is shifted because of a Court Decision, the years defining the different control periods would be considered to be adjusted accordingly, as provided by the Board note following 35 IAC 217.764.

i. Eligibility for NO<sub>x</sub> Allowances from the New Source Set-Aside (NSSA)

The Permittee is eligible to obtain NO<sub>x</sub> allowances for the budget EGU identified in Condition 3(b) from the NSSA, as provided by 35 IAC 217.768, because the budget EGU are "new" budget EGU.

j. Budget Permit Required by the NO<sub>x</sub> Trading Program

- i. For this source, this condition of this permit, i.e., Trading Program Condition 3, is the Budget Permit required by the NO<sub>x</sub> Trading Program and is intended to contain federally enforceable conditions addressing all applicable NO<sub>x</sub> Trading Program requirements. This Budget Permit shall be treated as a complete and segregable portion of this permit, as provided by 35 IAC 217.758(a)(2).
- ii. The Permittee and any other owner or operator of this source and each budget EGU at the source shall operate the budget EGU in compliance with this Budget Permit, pursuant to 35 IAC 217.756(b)(2).
- iii. No provision of this Budget Permit or the associated application shall be construed as exempting or excluding the Permittee, or other owner or operator and, to the extent applicable, the account representative of a budget source or budget EGU from compliance with any other regulation or requirement promulgated under the CAA, the Act, the approved State Implementation Plan, or other federally enforceable permit, pursuant to 35 IAC 217.756(g).
- iv. Upon recordation by USEPA, under 40 CFR 96, Subparts F or G, or 35 IAC 217.782, every allocation, transfer, or deduction of an allowance to or from the budget EGU's compliance accounts or to or from the overdraft account for the budget source is deemed to amend automatically, and become part of, this budget permit, pursuant to 35 IAC 217.756(d)(8). This automatic amendment of this budget permit shall be deemed an operation of law and will not require any further review.
- v. No revision of this Budget Permit shall excuse any violation of the requirements of the NO<sub>x</sub> Trading Program that occurs prior to the date that the revisions to this permit takes effect, pursuant to 35 IAC 217.756(f)(1).
- vi. The Permittee, or other owner or operator of the source, shall reapply for a Budget Permit for the source as required by 35 IAC Part 217, Subpart W and Section 39.5 of the Act. For purposes of the NO<sub>x</sub> Trading Program, the application shall contain the information specified by 35 IAC 217.758(b)(2).

SECTION 6: GENERAL PERMIT CONDITIONS

GENERAL PERMIT CONDITION 1: STANDARD CONDITIONS

Standard conditions for issuance of construction permits, attached hereto shall apply to this project, unless superseded by provisions of other permit conditions.

GENERAL PERMIT CONDITION 2: REQUIREMENTS FOR EMISSION TESTING

- a. i. At least 60 days prior to the actual date of initial emission testing required by this permit, a written test plan shall be submitted to the Illinois EPA for review. This plan shall describe the specific procedures for testing and shall include at a minimum:
  - A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
  - B. The specific conditions, e.g., operating rate and control device operating conditions, under which testing shall be performed including a discussion of why these conditions will be representative and the means by which the operating parameters will be determined.
  - C. The specific determinations of emissions that are intended to be made, including sampling and monitoring locations. As part of this plan, the Permittee may set forth a strategy for performing emission testing in the normal load range of the boilers.
  - D. The test method(s) that will be used, with the specific analysis method if the method can be used with different analysis methods.
- ii. As provided by 35 IAC 283.220(d), the Permittee need not submit a test plan for subsequent emission testing that will be conducted in accordance with the procedures used for previous tests accepted by the Illinois EPA or the previous test plan submitted to and approved by the Illinois EPA, provided that the Permittee's notification for testing, as required below, contains the information specified by 35 IAC 283.220(d)(1)(A), (B) and (C).
- b. i. The Permittee shall notify the Illinois EPA prior to performing emission testing required by this permit to enable the Illinois EPA to observe the tests. Notification for the expected date of testing shall be submitted a minimum of 30 days\* prior to the expected date, and identify the testing that will be performed. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days\* prior to the actual date of testing.
  - \* For a particular test, the Illinois EPA may at its discretion accept shorter advance notification provided that it does not interfere with the Illinois EPA's ability to observe testing.
- ii. This notification shall also identify the parties that will be performing testing and the set or sets of operating conditions under which testing will be performed.

- c. Three copies of the Final Reports for emission tests shall be forwarded to the Illinois EPA within 30 days after the test results are compiled and finalized. At a minimum, the Final Report for testing shall contain:
  - i. General information, i.e., testing personnel and test dates;
  - ii. A summary of results;
  - iii. Description of test method(s), including a description of sampling points, sampling train, analysis equipment, and test schedule;
  - iv. The operating conditions of the emission unit and associated control devices during testing;
  - v. Data and calculations, including copies of all raw data sheets and records of laboratory analysis, sample calculations, and data on equipment calibration.

GENERAL PERMIT CONDITION 3: REQUIREMENTS FOR RECORDS FOR DEVIATIONS

Except as specified in a particular provision of this permit or in a subsequent CAAPP Permit for the plant, records for deviations from applicable emission standards and control requirements shall include at least the following information: the date, time and estimated duration of the event; a description of the event; the manner in which the event was identified, if not readily apparent; the probable cause for deviation, if known, including a description of any equipment malfunction/breakdown associated with the event; information on the magnitude of the deviation, including actual emissions or performance in terms of the applicable standard if measured or readily estimated; confirmation that standard procedures were followed or a description of any event-specific corrective actions taken; and a description of any preventative measures taken to prevent future occurrences, if appropriate.

GENERAL PERMIT CONDITION 4: RETENTION AND AVAILABILITY OF RECORDS

Except as specified in a particular provision of this permit or in a subsequent CAAPP Permit for the plant, the Permittee shall keep all records, including written procedures and logs, required by this permit at a readily accessible location at the plant for at least five years and shall make such records available for inspection and copying by the Illinois EPA and USEPA.

GENERAL PERMIT CONDITION 5: NOTIFICATION OR REPORTING OF DEVIATIONS

Except as specified in a particular provision of this permit or in a subsequent CAAPP Permit for the plant, notifications and reports for deviation from applicable emission standards, control requirements, and compliance procedures shall include at least the following information: a description of the event, the date and time or duration of the event, information on the magnitude of the deviation, a description of the corrective measures taken, and a description of any preventative measures taken to prevent future occurrences.

GENERAL PERMIT CONDITION 6: GENERAL REQUIREMENTS FOR NOTIFICATION AND REPORTS

- a. i. Two copies of notifications and reports required by this permit shall be sent to the following address unless otherwise indicated above:

Illinois Environmental Protection Agency  
Division of Air Pollution Control  
Compliance and Enforcement Section  
P.O. Box 19276  
Springfield, Illinois 62794-9276

- ii. One copy of notifications and reports required by this permit, except the Annual Emission Report required by 35 IAC Part 254, shall be sent to the Illinois EPA's regional office at the following address unless otherwise indicated above:

Illinois Environmental Protection Agency  
Division of Air Pollution Control  
9511 West Harrison  
Des Plaines, Illinois 60123

- b. Quarterly reports shall cover calendar quarters and be submitted no later than 45 days after the end of the calendar quarter if a shorter deadline is not specified in a particular provision of this permit.
- c. The Permittee shall submit Annual Emission Reports to the Illinois EPA in accordance with 35 IAC Part 254. For hazardous air pollutants, this report shall include emission information for at least the following pollutants: hydrogen chloride, hydrogen fluoride, mercury, arsenic, beryllium, cadmium, chromium, lead, manganese, and nickel.



ATTACHMENT - TABLES

TABLE I

Emission Limitations for Each CFB Boiler

Pollutant	Pound/Million Btu <sup>1</sup>	Pounds/Hour <sup>2</sup>	Tons/Year
PM/PM10 <sup>3</sup>	0.015	43.8	192
NO <sub>x</sub> <sup>4</sup>	0.10 <sup>4</sup>	292.2	1,280
SO <sub>2</sub>	0.15	438.3	1,920
CO	0.11 <sup>5</sup>	321.4	1,408
VOM	0.004 <sup>5</sup>	11.7	51.2
Fluorides <sup>6</sup>	----	5.7	25.1
Sulfuric Acid Mist	----	1.2	5.1
Beryllium	----	----	0.004 (Combined)
Hydrogen Chloride	----	----	988 (Combined)
Hydrogen Fluoride	----	----	50.2 (Combined)
Mercury	----	----	0.10 (Combined)
Lead	----	----	0.31 (Combined)

Notes:

- <sup>1</sup> Compliance with the emission rates expressed in pound/million Btu heat input shall be determined in accordance with the provisions in Condition 1.2(b).
- <sup>2</sup> Compliance with hourly emission limits shall be based on 24-hour block averages (NO<sub>x</sub>, CO and SO<sub>2</sub>) and 3-hour block average (VOM, PM/PM<sub>10</sub>, fluorides, and sulfuric acid mist. Short-term emission rates do not apply during startup, shutdown or malfunction as addressed by Condition 1.6.
- <sup>3</sup> All particulate matter (PM) measured by USEPA Method 5 shall be considered PM<sub>10</sub> unless PM emissions are tested by USEPA Method 201 or 201A, as specified in 35 IAC 212.108(a). These PM limits do not address condensable particulate matter. (Condensable particulate was addressed in the particulate matter air quality impact analysis required by the PSD rules. For this purpose, the emission rate for condensable particulate matter was estimated to be 0.035 lb/million Btu.)
- <sup>4</sup> The NO<sub>x</sub> limits are phased, with an initial limit for the demonstration period, and provision for an even lower limit, which limit could be as low as 0.08 pound per million Btu, pursuant to the optimization program required by Conditions 1.2(d) and 1.15.
- <sup>5</sup> As an alternative to this limitation expressed in pound/million Btu, the boiler may comply with the limitation expressed in pounds/hour.
- <sup>6</sup> The limit for fluorides is expressed in terms of hydrogen fluorides.

TABLE II

Emission Limitations for  
Certain Bulk Material Preparation Operations Involving Gas Combustion

(Pounds per Hour and Tons per Year)

Emission Unit	PM		CO		NO <sub>x</sub>		VOM	
	Hourly Rate	Annual Rate	Hourly Rate	Annual Rate	Hourly Rate	Annual Rate	Hourly Rate	Annual Rate
Limestone Preparation								
Dryer/Mill System 1	0.24	1.05	2.4	10.5	0.9	3.85	0.24	1.05
Dryer/Mill System 2	0.24	1.05	2.4	10.5	0.9	3.85	0.24	1.05
Dryer/Mill System 3	0.24	1.05	2.4	10.5	0.9	3.85	0.24	1.05
Totals		3.15		31.5		11.5		3.2

TABLE III

Particulate Matter (PM) Emission Limitations for  
Bulk Material Handling Operations

(Grains Per Dry Cubic Foot, Pounds Per Hour, and Tons Per Year)

Emission Units	Exhaust Loading	Hourly Rate	Annual Rate
Receiving and Handling			
Railcar Unloading, Transfer House, Crusher Building, Hoppers, etc., Except as Below	0.001	0.714	3.13
Limestone Reclaim	0.005	0.086	0.38
Material Storage Buildings	--	--	0.24
Subtotal		0.80	3.75
Limestone Preparation			
Preparation Equipment, Except as Below	0.001	0.270	0.117
Dryer/Mill System 1*	0.001	0.240	1.05
Dryer/Mill System 2*	0.001	0.240	1.05
Dryer/Mill System 3*	0.001	0.240	1.05
Limestone and Infeed Silos	0.005	0.621	2.73
Subtotal		1.354	7.05
Ash Handling and Loadout			
Bed Ash Silos, Transport Systems, Fly Ash Silos, etc., Except as Below	0.001	0.428	1.88
Fly Ash Hoppers	0.005	0.026	0.12
Bed and Fly Ash Loadout	--	--	0.036
Subtotal		0.454	2.04
Total		--	12.84

\* See also Table II

ATTACHMENT - ACID RAIN PERMIT (DRAFT)

217-782-2113

ACID RAIN PROGRAM PERMIT

Indeck-Elwood Energy Center  
Attn: Mr. Thomas M Campone, Designated Representative  
600 North Buffalo Grove Road, Suite 300  
Buffalo Grove, Illinois 60089

Oris No.: 55823  
Illinois EPA I.D. No.: 197035AAJ  
Source/Unit: Indeck-Elwood Energy Center, Unit 1 and 2  
Date Received: May 13, 2002  
Date Issued: "Draft"  
Effective Date: January 1, 2006  
Expiration Date: December 31, 2010

STATEMENT OF BASIS:

In accordance with Section 39.5(17) (b) of the Illinois Environmental Protection Act and Titles IV and V of the Clean Air Act, the Illinois Environmental Protection Agency is issuing this Acid Rain Program permit for the Indeck-Elwood Energy Center.

SULFUR DIOXIDE (SO<sub>2</sub>) ALLOCATIONS AND NITROGEN OXIDE (NO<sub>x</sub>) REQUIREMENTS FOR EACH AFFECTED UNIT:

Unit 1 and Unit 2	SO <sub>2</sub> Allowances	These units are not entitled to an allocation of SO <sub>2</sub> allowances pursuant to 40 CFR Part 73
	NO <sub>x</sub> Emission Limitation	These units are not subject to a NO <sub>x</sub> emissions limitation under 40 CFR Part 76.

This Acid Rain Program permit contains provisions related to sulfur dioxide (SO<sub>2</sub>) emissions and requires the owners and operators to hold SO<sub>2</sub> allowances to account for SO<sub>2</sub> emissions beginning in the year 2000. An allowance is a limited authorization to emit up to one ton of SO<sub>2</sub> during or after a specified calendar year. Although this plant is not eligible for an allowance allocated by USEPA, the owners or operators may obtain SO<sub>2</sub> allowances to cover emissions from other sources under a marketable allowance program. The transfer of allowances to and from a unit account does not necessitate a revision to this permit (See 40 CFR 72.84).

This permit contains provisions related to nitrogen oxide (NO<sub>x</sub>) emissions requiring the owners or operators to monitor NO<sub>x</sub> emissions from affected units in accordance with the applicable provisions of 40 CFR Part 75.

This Acid Rain Program permit does not authorize the construction and operation of the affected units as such matters are addressed by Titles I and V of the Clean Air Act. If the construction and operation of one of the affected units is not undertaken, this permit shall not cover such unit.

In addition, notwithstanding the effective date of this permit as specified above, this permit shall not take effect for an individual affected unit until January 1 of the year in which the unit commences operation.

COMMENTS, NOTES AND JUSTIFICATIONS:

This permit does not affect the owners and operators responsibility to meet all other applicable local, state, and federal requirements, including requirements addressing SO<sub>2</sub> and NO<sub>x</sub> emissions.

PERMIT APPLICATION:

The SO<sub>2</sub> allowance requirements and other standard requirements as set forth in the application are incorporated by reference into this permit. The owners and operators of this source must comply with the standard requirements and special provisions set forth in the application.

If you have any questions regarding this permit, please contact Mohamed Anane at 217/782-2113.

Donald E. Sutton, P.E.  
Manager, Permits Section  
Division of Air Pollution Control

DES:MA:jar

cc: Cecilia Mijares, USEPA Region V  
Illinois EPA Region 1

ATTACHMENT - STANDARD PERMIT CONDITIONS

**STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS  
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Illinois EPA and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Illinois EPA upon the presentation of credentials, at reasonable times:
  - a. To enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,
  - b. To have access to and to copy any records required to be kept under the terms and conditions of this permit,
  - c. To inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,
  - d. To obtain and remove samples of any discharge or emissions of pollutants, and
  - e. To enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:
  - a. Shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,
  - b. Does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities.

- c. Does not release the Permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations.
  - d. Does not take into consideration or attest to the structural stability of any units or parts of the project, and
  - e. In no manner implies or suggests that the Illinois EPA (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
- 6.
- a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Illinois EPA before the equipment covered by this permit is placed into operation.
  - b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Illinois EPA may file a complaint with the Board for modification, suspension or revocation of a permit.
- a. Upon discovery that the permit application contained misrepresentations, misinformation or false statement or that all relevant facts were not disclosed, or
  - b. Upon finding that any standard or special conditions have been violated, or
  - c. Upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

July, 1985, Revised, May, 1999

Illinois Environmental Protection Agency  
Bureau of Air, Permit Section  
1021 North Grand Avenue East  
P.O. Box 19276  
Springfield, Illinois 62794-9276  
217/782-2113

Project Summary  
For a Construction Permit Application  
From  
Indeck-Elwood, LLC  
For The  
Indeck-Elwood Energy Center  
Elwood, Illinois

Site Identification No.: 197035AAJ  
Application No.: 02030060  
Date Received: March 21, 2002

Schedule

Public Comment Period Begins: April 7, 2003  
Public Hearing: May 22, 2003  
Public Comment Period Closes: June 21, 2003

Illinois EPA Contacts

Permit Analyst: Shashi Shah  
Community Relations Coordinator: Brad Frost  
Hearing Officer: Daniel Merriman



## I. INTRODUCTION

Indeck-Elwood, LLC (Indeck) has requested a permit to construct a nominal 660-megawatt electric power plant in Elwood, Illinois. Power will be generated by two circulating fluidized bed (CFB) boilers.

The Illinois EPA has prepared a draft of the construction permit that it would propose to issue for the plant. The permit is intended to identify the applicable rules governing emissions from the plant and to set limitations on those emissions. The permit is also intended to establish appropriate compliance procedures for the plant, including requirements for emissions testing, continuous emissions monitoring, record keeping, and reporting. The Permittee will have to carry out these procedures on an ongoing basis to demonstrate that the plant is operating within the limitations set forth by the permit and that emissions are being properly controlled. The Illinois EPA has also prepared a draft Acid Rain Permit and a draft Budget Permit for the proposed plant, to address requirements under the federal Acid Rain program and state's NO<sub>x</sub> Trading program.

## II. PROJECT DESCRIPTION

Indeck has proposed to construct two CFB boilers, and associated equipment including solid fuel handling and storage; ash handling and storage; limestone handling and storage; cooling towers; and other ancillary operations.

The CFB boilers will be fired on coal as their primary fuel with capability to fire natural gas as a startup fuel to heat the bed, at which point combustion is maintained by firing of coal. The boilers may also fire supplemental fuels, such as petroleum coke and coal tailings, with the coal.

In a CFB boiler, fuel is burned in "floating" bed with air forced in from the bottom. The air pressure floats the bed within the combustion chamber allowing the bed to behave like a fluid. This provides certain benefits for reducing emissions. First, fluidized bed combustion reduces formation of nitrogen oxides (NO<sub>x</sub>). Air is introduced at multiple levels, both as fluidizing air and as secondary air over the top of the bed, which stages combustion avoiding the combustion conditions that favors formation of NO<sub>x</sub>. The high degree of mixing in the bed provides uniform temperatures throughout the bed. Temperature and residence time in the combustion chamber are sufficient to keep emissions of CO and VOM to low levels. In addition, crushed limestone is usually added directly into the bed of a CFB boiler to absorb sulfur dioxide. In the bed, the limestone, and lime formed by calcination of the limestone, act to chemically absorb sulfur dioxide (SO<sub>2</sub>) directly from the gases in the boiler, reducing SO<sub>2</sub> emissions

Hot combustion gases and entrained limestone flow up the boiler and through hot cyclones at the top of the combustion chamber. Particles captured in the cyclone are recirculated back to the bed for better utilization of the limestone sorbent.

Following the hot cyclone, Selective Non-Catalytic Reduction (SNCR) technology is employed for NO<sub>x</sub> control. In SNCR, ammonia (NH<sub>3</sub>) is injected into hot flue gases. The NH<sub>3</sub> reacts with NO<sub>x</sub> present in the flue gases, reducing the NO<sub>x</sub> back to nitrogen (N<sub>2</sub>), forming water (H<sub>2</sub>O) in the process.

Particulate matter (PM) in the flue gases is captured by a fabric filter, also known as a baghouse. At the baghouse, the flue gas has been cooled to less than 400°F. In addition to removing PM, removal of SO<sub>2</sub> and other pollutants occurs in the baghouse and in the ductwork leading to the baghouse as pollutants are absorbed by particles of limestone and lime that are captured by the baghouse.

Bed ash and fly ash from the CFB boilers will be conveyed to an ash silo. The system for ash movement contains separators with final particulate clean up through fabric filter collectors. Solid fuel will be transferred by covered conveyors at the solid fuel handling facilities. Limestone will be transferred by enclosed conveyors from a limestone silo. A limestone truck dump with a fabric filter and enclosure will also be installed.

### III. PROJECT EMISSIONS

The potential emissions of the proposed boilers are listed below. Potential emissions are calculated based on continuous operation at the maximum load. Actual emissions will be less to the extent that the plant does not operate year round and at its maximum capacity.

<u>Pollutant</u>	<u>Potential Emission (Tons Per Year)</u>
Particulate Matter (PM)	384.0
Sulfur Dioxide (SO <sub>2</sub> )	3,840.0
Nitrogen Oxides (NO <sub>x</sub> )	2,560.0
Carbon Monoxide (CO)	2,816.0
Volatile Organic Material (VOM)	102.4
Fluorides	50.2
Sulfuric Acid Mist	10.2
Beryllium	0.004
Mercury	0.1
Hydrogen Chloride	988.0
Hydrogen Fluoride	50.2
Lead	0.31

Much smaller amounts of particulate matter, nitrogen oxides, carbon monoxide and volatile organic material will also be emitted from operations at the source including the auxiliary boiler, the storage and handling of coal, ash and limestone and certain bulk material preparation operations involving gas combustion dryer.

#### IV. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with Illinois Pollution Control Board emission standards. The Board's emission standards represent the basic requirements for sources in Illinois. The various emission units in the proposed plant should readily comply with applicable Board standards.

The CFB boilers are also subject to the federal New Source Performance Standards (NSPS), 40 CFR 60 Subpart Da, for electric utility steam generating units. The NSPS sets emission limits for nitrogen oxides, sulfur dioxide and particulate matter emissions from the boilers. Requirements for testing, continuous emissions monitoring, record keeping, and reporting are also specified. Certain other new units are also subject to other NSPS. The Illinois EPA is administering NSPS in Illinois on behalf of the United States EPA under a delegation agreement.

#### V. OTHER APPLICABLE REGULATIONS

##### A. Prevention of Significant Deterioration (PSD)

The proposed plant is a major new source subject to the federal rules for Prevention of Significant Deterioration of Air Quality (PSD), 40 CFR 52.21. Under PSD, plant is major for emissions of nitrogen oxides, sulfur dioxide, particulate matter and carbon monoxide, with potential annual emissions of more than 100 tons for each of these pollutants for which the proposed location is an attainment area. The plant is also significant for sulfuric acid mist and fluorides because potential emissions exceed the PSD significant emission thresholds for these pollutants, 7 and 3 tons per year, respectively. The plant is not a significant source for lead emissions, for which the PSD significance threshold is set at 0.6 ton per year.

##### B. Major Stationary Sources Construction and Modification (MSSCAM)

The proposed plant is a major new source under the state rules for Major Stationary Source Construction and Modification (MSSCAM), 35 IAC Part 203. This is because the plant's potential emissions of volatile organic material (VOM) are more than 25 tons per year and the plant would be located in an area that is designated severe nonattainment for ozone.

##### C. Maximum Achievable Control Technology (MACT)

The proposed plant is a major source for emissions of hazardous air pollutants (HAP). The potential HAP emissions from the plant will be greater than 10 tons of certain individual HAP i.e. hydrogen fluoride and hydrogen chloride, and more than 25 tons in aggregate for all HAP. Therefore, the plant is subject to case-by-case review under Section 112(g) of the Clean Air Act for use Maximum Achievable Control Technology (MACT) to control emissions of HAP, including mercury and other metals, hydrogen chloride and hydrogen fluoride, and various organic HAPs.

D. Emissions Reduction Market System (ERMS)

The proposed plant is considered to be a new participating source under Illinois' Emissions Reduction Market System (ERMS), 35 IAC Part 205. This is because emissions of VOM are expected to be greater than 10 tons during each allotment trading season (May through September). As a new participating source, Indeck would be required to obtain allotment trading units (ATU) under the ERMS for the plant's actual VOM emissions.

E. Acid Rain Program

The proposed plant is an affected source and the CFB boilers are affected units for Acid Deposition: Title IV of the Clean Air Act, and regulations promulgated thereunder. These provisions establish requirements for affected sources related to control of emissions of pollutants that contribute to acid rain. One of these requirements is to operate pursuant to an Acid Rain permit. The Illinois EPA is proposing to issue the initial Acid Rain permit for the proposed plant in conjunction with issuance of the construction permit for the plant.

F. NO<sub>x</sub> Trading Program

The CFB boilers would qualify as Electrical Generating Units (EGU) for purposes of 35 IAC Part 217, Subpart W, NO<sub>x</sub> Trading Program for Electrical Generating Units. As an EGU, the Permittee would have to hold NO<sub>x</sub> allowances for the NO<sub>x</sub> emissions of the boilers during each seasonal control period. Another requirement of the NO<sub>x</sub> Trading Program is to operate pursuant to a Budget permit. The Illinois EPA is proposing to issue the initial Budget permit for the CFB boilers in conjunction with issuance of the construction permit for the plant.

G. Clean Air Act Permit Program (CAAPP)

This plant would be considered a major source under Illinois' Clean Air Act Permit Program (CAAPP) pursuant to Title V of the Clean Air Act. This is because the plant would be a major source for purposes of the CAAPP because it is a major source for purposes of the above regulatory programs. Indeck would have to apply for its CAAPP permit within 12 months after initial startup of the plant.

VI. MAJOR STATIONARY SOURCE CONSTRUCTION AND MODIFICATION (MSSCAM)

For a major project, the state rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203 require: 1) An emission limit for volatile organic materials (VOM) that represents the Lowest Achievable Emission Rate (LAER), 2) Compensating VOM emission reductions from other sources commonly called offsets, 3) An analysis of alternatives to the project, and 4) Proof that other existing major sources owned by the permit applicant within Illinois are in compliance with applicable air pollution regulations. A discussion of these requirements follows.

A. Lowest Achievable Emission Rate (LAER)

LAER is defined at 35 IAC 203.301 as:

The most stringent rate of emissions based on the following:

1. The lowest emission limitation, which is contained in the implementation plan of any state for such class or category of stationary source, unless it is demonstrated that such limitation is not achievable;
2. The lowest emission limitation which is achieved in practice or is achievable by such a class or category of stationary source; or
3. The applicable New Source Performance Standard.

Indeck prepared a LAER demonstration identifying the control techniques and emission limits required of other similar operations to control VOM. This demonstration included information from the United States EPA's BACT/LAER Clearinghouse, which showed that coal-fired boilers control VOM with good combustion practices. In general VOM is emitted as a result of incomplete combustion of fuel. VOM is controlled by providing adequate fuel residence time and high temperature in combustion zone to ensure complete combustion. The Illinois EPA has determined that LAER for the CFB boilers is the use of very good combustion practices.

B. Emission Offsets

The emissions associated with a major project in a nonattainment area must not interfere with the state plan to achieve attainment of the national ambient air quality standards. This plan consists of new programs and regulations designed to achieve the national standards and is based on a detailed analysis of current and projected emission and air quality levels. In order to account for the emissions increase from a major project proposed in a nonattainment area, the applicant must provide compensating emission reductions from other sources that have not been relied on in the attainment plan. These emission reductions are commonly referred to as emission offsets. Indeck must obtain creditable emission decreases or offsets from the existing sources in the Chicago ozone nonattainment area.

Because the Chicago Area is a severe ozone nonattainment area, emission offsets at a ratio of 1.3:1.0, i.e., for each ton of VOM emissions from a project, 1.3 ton of offsets must be provided. At this ratio, Indeck is required to provide an emission offset of 140.4 ton per year. Indeck is working with 3M to obtain emission offsets for a reduction in VOM emission at its plant in Bedford Park.

C. Existing Source Compliance

Indeck operates one source in Illinois, the NRG Rockford Energy Center. Indeck has stated that this plant is in compliance.

D. Analysis of Alternatives to the Proposed Project

Indeck has provided an analysis of alternatives that concludes that from an economic, environmental, and energy viewpoint, the benefits of the proposed outweigh other alternatives (such as, building the plant elsewhere). In this regard, electricity is essential to modern society and a reliable and affordable supply of electricity is important to public well being. New coal-fired power plants are beneficial as they increase the potential sources of electricity and generate competition among suppliers of electricity. New plants allow and facilitate the reduced operation and retirement of older less-efficient and more polluting power plants. They also allow local Illinois coal to be used as fuel. While energy conservation and alternative power sources, such as wind power, are also desirable actions to reduce emissions and other environmental impacts associated with generation of electricity, they do not address the need for new power generation. In addition, given the current technology for transmission of power, it is desirable that power plants generally be located near the users of the electricity.

VII. BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

Under the PSD rules, the Permittee must demonstrate that Best Available Control Technology (BACT) will be used to control emissions of NO<sub>x</sub>, SO<sub>2</sub>, CO, PM/PM<sub>10</sub>, sulfuric acid, fluorides and beryllium from the proposed plant. Indeck has provided a detailed BACT demonstration in its application.

A. Introduction

The Clean Air Act defines BACT as:

"An emission limitation based on the maximum degree of reduction which the permitting authority, on a case-by-case basis, taking into account energy, environmental and other costs, determines is achievable."

BACT is generally set by a "Top Down Procedure. In this procedure, the most stringent control requirement in practice elsewhere is assumed to constitute BACT for a particular project, unless the impacts associated with the control requirements are shown to be excessive. This approach has generally been followed by the Illinois EPA. A summary of the proposed BACT Determination is provided in Attachment 1.

B. BACT Discussion for the CFB Boilers:

Nitrogen Oxide (NO<sub>x</sub>) - Review of the United States EPA's BACT/LAER Clearinghouse indicates that selective non-catalytic reduction in combination with combustion controls as proposed by Indeck, are the NO<sub>x</sub> control measures used on new CFB boilers. Other add-on control devices have not been used.

Based on available data, the following technologies were reviewed as possible control options for NO<sub>x</sub>: 1) Selective catalytic reduction, 2) Selective non-catalytic reduction, and 3) Combustion controls. In addition, Integrated Gasification Coal Combustion (IGCC) was evaluated as an alternative production process for generating electricity from coal.

Selective catalytic reduction (SCR) uses a chemical reaction to remove NO<sub>x</sub> from the exhaust gas. The reaction between gaseous NO<sub>x</sub> and a reagent, i.e. ammonia (NH<sub>3</sub>), as it passes through a porous ceramic bed or screen impregnated with catalyst, reduces NO<sub>x</sub> back to N<sub>2</sub>. This reaction takes place at a temperature of about 750°F. The temperature of exhaust gas from the baghouse will be well below this, about 270°F, making it unsuitable for SCR operation without reheating the gas. Particulates in the exhaust before the baghouse would be present in sufficient concentration to coat and poison the catalyst if SCR was installed before the baghouse. SCR is not a demonstrated technology for control of NO<sub>x</sub> emissions from CFB boilers. In addition, new pulverized coal boilers, for which SCR is feasible, achieve similar levels of NO<sub>x</sub> emissions as CFB boilers equipped with SNCR.

Selective non-catalytic reduction (SNCR) also involves a reaction with ammonia but without the use of a catalyst. The effectiveness of this method is dependent on initial NO<sub>x</sub> concentration and temperature, residence time and mixing in the reaction zone. The temperature of the gas in the reaction zone must be in the range of 1600°F to 1800°F to be suitable for effective operation of an SNCR system. This range is present in the intermediate zone of the CFB boilers after the hot cyclones. As SNCR avoids the need for a catalyst to facilitate the NO<sub>x</sub> reduction reaction, it is also a much simpler control technique that is appropriately applied to CFB boilers, given their low NO<sub>x</sub> characteristics compared to pulverized coal boilers.

Integrated Gasification Coal Combustion (IGCC) is a two-stage process used for the production of electricity. In IGCC, coal or other fuel is first gasified to produce a synthetic gaseous fuel. This gaseous fuel is then fired combined cycle turbines to generate electricity. A review of the small number of existing IGCC projects indicates that IGCC achieves NO<sub>x</sub> emission rates that are similar to those achieved by new power plants with boilers that directly fire coal. This similarity in performance is generally explainable because although the synthetic fuel

produced by IGCC is in a gaseous state, it has low heat content. Efficient combustion of this fuel in a turbine requires temperatures and oxygen levels in the burners that prevent NO<sub>x</sub> emissions from being lower than those achieved by modern pulverized coal and CFB boilers equipped with SCR and SNCR, respectively. In addition, IGCC is still a developing technology and existing IGCC plants have received substantial grants from the United States Department of Energy. The higher costs and the uncertainties associated with IGCC would prevent the proposed plant from being developed. At the present time, this would also likely be the case for other similar power plant projects that are being developed primarily with private (non-governmental) financing.

Accordingly, the use of SNCR in conjunction with the inherent low NO<sub>x</sub> character of CFB boilers is considered BACT for emissions of NO<sub>x</sub> from the proposed CFB boilers.

Sulfur dioxide (SO<sub>2</sub>) - Technically feasible SO<sub>2</sub> control alternatives for the CFB boilers include limestone addition to the bed by itself and limestone bed addition in combination with a spray drying system or flue gas desulfurization (FGD) system. In addition, use of IGCC was considered as a process alternative to reduce SO<sub>2</sub> emissions.

Spray drying systems are used on some CFB boilers in conjunction with bed addition of limestone. However, this appears to be a financial decision based on the cost and availability of limestone, as to the most economical way to meet the applicable SO<sub>2</sub> emission limitation. In circumstances where limestone is not readily available, rather than purchase a larger volume of limestone, the plant may prefer to purchase a small volume of lime, which has already been calcined, for use in a spray drying system. Thus the relevant issue for BACT is the SO<sub>2</sub> emission limitation that is established. In this regard, the permit is based on achieving approximately 98 percent control of sulfur present in the design coal supply for the boilers. This is a stringent level of SO<sub>2</sub> control, consistent with the level of SO<sub>2</sub> control required at other new coal-fired power plants. A higher level of SO<sub>2</sub> removal would be required at the proposed plant as petroleum coke, with its higher sulfur content, would be used to supplement the fuel supply to the boilers.

None of the CFB boilers listed in the BACT/LAER Clearinghouse show use of an FGD system. FGD systems are used on pulverized coal boilers, which must rely on an add-on post combustion FGD system for control of SO<sub>2</sub> emissions. The emission rates and levels of SO<sub>2</sub> control achieved on new pulverized coal boilers with such systems is comparable to the level of control to be achieved with the proposed CFB boilers.



In IGCC, the raw fuel gas is treated to remove sulfur compounds before the fuel gas is burned in the turbines. Available information does not indicate that IGCC plants are achieving significantly lower SO<sub>2</sub> emission rates than would be required of the proposed CFB boilers. An exact comparison of SO<sub>2</sub> emission rates with IGCC is not possible because of differences in the sulfur content of the fuel supply to existing IGCC plants. In addition, the SO<sub>2</sub> emissions at an IGCC plant also include "non-combustion" emissions from the chemical process equipment used to convert the recovered sulfur into elemental sulfur for sale or disposal. These appear to significantly add to the total SO<sub>2</sub> emissions of an IGCC plant.

Limestone bed addition is a standard feature in operation of a CFB boiler. This SO<sub>2</sub> control alternative has been demonstrated to be reliable, effective, and would not result in adverse economic, energy, or environmental impacts. Based on these criteria, the use of limestone addition to the bed to achieve is found to be BACT for the CFB boilers. At the same time, the permit allows for a spray drying system to be used, in the event that Indeck chooses to do so.

Particulate matter (PM) - For the CFB boilers, the alternative controls for particulate matter emissions are fabric filters and electrostatic precipitators. Use of IGCC was also considered. Wet scrubbing was not considered a demonstrated control technique for the boilers and does not offer more stringent levels of control for particulate matter than a baghouse.

For CFB boilers, the standard PM control device is fabric filtration with a baghouse. Fabric filters are very effective at filtering particulate matter out of the flue gases. The composition of the flue gases entering a baghouse from a CFB boiler is such that a baghouse can be reliably used to control PM emissions. Information for IGCC plants does not show significantly lower PM emission rates with IGCC.

For particulate matter, BACT for the CFB boilers is effective use of baghouses.

Carbon monoxide (CO) - Control of the emissions of CO from combustion units may be accomplished in two ways: 1) Design of the combustion process and operation with good combustion practices to minimize the formation of CO, and 2) Catalytic oxidation of CO after it has been formed in the combustion process. In addition, use of IGCC was considered as a process alternative for the plant to reduce SO<sub>2</sub> emissions.

Catalytic oxidation has been utilized on some combustion units but is considered technically infeasible on coal-fired boilers. While IGCC appears to achieve significantly lower CO emissions than a boiler power plant, an exact comparison is difficult

because of CO emissions associated with the flare system that is present with IGCC to deal with upsets of the gasification equipment. However, use of IGCC can be eliminated as BACT due to its accompanying economic impacts, which would make the project no longer viable.

Good combustion practices are concluded to be BACT for control of CO emissions from the CFB boilers.

Beryllium - Beryllium is emitted as a component of the particulate matter emitted from the boilers. Therefore, use of a baghouse as BACT for particulate matter also represents use of BACT for beryllium.

C. BACT Discussion for Other Emission Units

The application also addresses BACT for other emission units at the proposed plant. Appropriate control measures are proposed. These include use of baghouses and implementation of other stringent control measures to control process particulate matter and fugitive dust emissions from material handling operations. For the ancillary boiler, natural gas be the sole fuel and low-NO<sub>x</sub> burners will be used to minimize NO<sub>x</sub> emissions.

VIII. MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY (MACT)

The proposed plant is a major source of hazardous air pollutants (HAP) with potential annual emissions of hydrogen chloride and hydrogen fluoride greater than 10 tons. A case-by-case MACT determination is required for plant.

The CFB boilers are the principle source of HAP emissions at the plant, due to the presence chlorine, fluorine, mercury and other heavy metals in the fuel for the boilers. The mercury emission rate for the CFB boilers was determined based upon the case-by-case analysis presented in the application. The mercury emission rate used to calculate potential emissions is 0.000004 lb/million Btu consistent with other recently issued permits. Given the nature of the data on mercury emissions from coal fired boilers, the Permit establishes four alternatives to compliance with the emission rate. These alternatives are achieved as:

1. Achievement of a removal efficiency of 95 percent achieved without injection of activated carbon or other similar material specifically used to control emissions of mercury.
2. Injection of powdered activated carbon or other similar material for the maximum practicable degree of mercury removal.
3. Compliance with the requirement for effective control of mercury emissions as may be established in a revised permit if the Permittee demonstrates that it cannot reasonably obtain performance guarantees or engineering confirmation for compliance with the specified emission rate or control efficiency.

4. The requirements for control of mercury emissions established by USEPA, once applicable rules are adopted by USEPA.

The hydrogen chloride emission rate was determined based upon the case-by-case analysis presented in the application. The emission rate used to calculate potential emissions is 0.04 lb/million Btu. Given the nature of the data on the hydrogen chloride emissions from coal fired boilers, the Permit provides for lowering this limit following evaluation of the actual performance of the control measures. In addition, the Permit also establishes alternatives to compliance with this emission rate, similar to the alternatives established for mercury.

The Illinois EPA has determined that the MACT for fluorides will be achieved by the specific control measures for particulate matter, sulfur dioxide, and hydrogen chloride.

For other emission units, emissions of HAP will be appropriately controlled by the measures required as BACT and LAER as HAP will be present in the particulate matter and volatile organic material emissions from the units.

## IX. AIR QUALITY ANALYSIS

### A. Introduction

The previous discussion addressed emissions and emission standards. Emissions are the quantity of pollutants emitted by a source, as they are released to the atmosphere from a stack. Standards are set limiting the amount of these emissions primarily as a means to address the quality of air. The quality of air as we breathe it or as plants and animals experience it, is known as ambient air quality. Ambient air quality considers the emissions from a particular source after they have dispersed following release from a stack, been added to the background level of pollutants in the air entering the region, and joined with the pollutants emitted from other nearby sources.

The concern for pollutants in ambient air is typically expressed in terms of the concentration of the pollutant in the air. One form of this expression is parts per million. A more common scientific form is microgram per cubic meter, millionth of a gram in a cube of air one meter on a side.

The United States EPA has established standards, which set limits on the level of pollution in the ambient air. These ambient air quality standards are based on a broad collection of scientific data to define levels of ambient air quality where adverse human health impacts and welfare impacts may occur. As part of the process of adopting air quality standards, the United States EPA compiles the various scientific information on impacts into a "criteria" document. Hence the pollutants for which legal air

quality standards exist are known as criteria pollutants. Based upon the nature and effects of a pollutant, appropriate numerical limitation(s) and associated averaging times are set to protect against adverse impacts. For some pollutants several standards are set, for others only a single standard has been established.

Areas can be designated as attainment or nonattainment for criteria pollutants, based on the existing air quality. Areas in which the air quality standard is met for a pollutant are known as attainment. If the air quality standard is exceeded, the area is known as nonattainment. Given the geographic extent of areas designated as nonattainment and the USEPA's process for redesignating an area to attainment, the air quality in some or all of an area designated as nonattainment may actually be in compliance with the relevant air quality standard.

In attainment areas one wishes to generally preserve the existing clean air resource and prevent increases in emissions which would result in nonattainment. In a nonattainment area efforts must be taken to reduce emissions to come into attainment. An area can be attainment for one pollutant and nonattainment for another.

Compliance with air quality standards is determined by two techniques -monitoring and modeling. In monitoring one actually samples the levels of pollutants in the air on a routine basis. This is particularly valuable as monitoring provides data on actual air quality, considering actual weather and source operation. The Illinois EPA operates a network of ambient monitoring stations across the state.

Monitoring is limited because one cannot operate monitors at all locations. One also cannot monitor to predict the effect of a future source, which has not yet been built, or to evaluate the effect of possible regulatory programs to reduce emissions. Modeling is used for these purposes: Modeling uses mathematical equations to predict ambient concentrations based on various factors, including the height of a stack, the velocity and temperature of exhaust gases, and weather data (speed, direction and atmospheric mixing).

Modeling is performed by computer, allowing detailed estimates to be made of air quality impacts over a range of weather data. Modeling techniques are well developed for essentially stable pollutants like particulate matter, NO<sub>x</sub>, and CO, and can readily address the impact of individual sources. Modeling techniques for reactive pollutants, e.g., ozone, are more complex and have generally been developed for analysis of entire urban areas. They are not applicable to a single source with small amounts of emissions.

Air quality analysis is the process of predicting ambient concentrations in an area or as a result of a project and comparing the concentration to the air quality standard or other reference level. Air quality analysis uses a combination of monitoring data and modeling as appropriate.

## B. Indeck's Air Quality Analysis

An ambient air quality analysis was conducted by a consulting firm, Earth Tech, on behalf of Indeck to assess the impacts of its emissions of PM, SO<sub>2</sub>, NO<sub>x</sub> and CO on ambient air quality. Under the PSD rules, this analysis must determine whether the proposed project will cause or contribute to a violation of any applicable air quality standard.

Modeling was done incorporating proposed new emissions at Indeck and major stationary sources in surrounding areas. The proposed plant consists of two CFB boilers and associated steam turbine generators. Additional combustion units at this proposed plant are an ancillary boiler, limestone dryers, and emergency diesel engines. There are also roads, cooling towers, and storage emission points that are accounted for in PM<sub>10</sub> modeling. For certain of these units based on initial modeling that was performed, Indeck committed to lower emission rates to reduce its impact on PM<sub>10</sub> air quality which is largely driven by these units with their relatively low points of release, located near the plant's fence line. The analysis performed conforms to the guidance and requirements of the United States EPA and the Illinois EPA. Background concentrations were added to modeled impacts for SO<sub>2</sub>, NO<sub>x</sub> and PM<sub>10</sub> National Ambient Air Quality Standards (NAAQS). The highest values for the particular averaging period from recent Illinois EPA monitoring data at a representative site were used as background.

A PSD modeling analysis begins with a determination of whether the air quality impacts of a proposed project exceed Significant Impact Levels (SIL) for any pollutant and averaging period. If no SIL is exceeded, then further modeling is not required. If a SIL is exceeded, then regional modeling must be performed to address both PSD increment consumption and the NAAQS for each pollutant for each averaging period for which the SIL is exceeded.

The results of the modeling to determine impacts of the proposed plant are provided below:

Results of the Preliminary Modeling Analysis (ug/m<sup>3</sup>)

Pollutant	Averaging Period	Maximum Project Impact	Significant Impact Level (SIL)	National Ambient Air Quality Standard (NAAQS)
NO <sub>x</sub>	Annual	6.78	1	100
CO	1-Hour	105.0	2,000	40,000
	8-Hour	32.6	500	10,000
SO <sub>2</sub>	3-Hour	69.9	25	1,300
	24-Hour	13.6	5	365
	Annual	0.86	1	80
PM <sub>10</sub>	24-Hour	6.8	5	150
	Annual	1.0	1	50

The results show the maximum impacts of the proposed plant by itself with respect to the NAAQS. The modeling shows that the impacts of the proposed plant exceed the SIL for 24-hour and annual PM<sub>10</sub>, 3-hour and 24-hour SO<sub>2</sub>, and annual NO<sub>2</sub>. Therefore, a full PSD modeling analysis was required for these pollutants and averaging times. For CO, the modeled impacts are less than the significant impact levels so no further analysis is required for CO.

PSD areas have maximum allowable increases in the concentrations of sulfur dioxide, nitrogen oxides and PM<sub>10</sub>, which cannot be exceeded. These limits are called "allowable increments. Under no circumstances is air quality in a PSD area allowed to deteriorate beyond the NAAQS. One part of a full regional PSD modeling analysis involves modeling the proposed project and all other PSD increment consuming sources in the area to determine whether PSD increments will be consumed. This modeling was done with an inventory of existing emission units supplied by Illinois EPA. The results of the increment consumption modeling are summarized below.

PSD Increment Consumption (ug/m<sup>3</sup>)

Pollutant	Averaging Period	Maximum Increment Consumed	PSD Increment
NO <sub>x</sub>	Annual	8.9	25
SO <sub>2</sub>	3-Hour	69.3	512
SO <sub>2</sub>	24-Hour	13.9	91
PM <sub>10</sub>	24-Hour	6.7	30
PM <sub>10</sub>	Annual	1.1	17

The results demonstrate that the applicable PSD increments will not be exceeded by the operation of this plant and other existing PSD increment consuming sources.

A regional modeling study was also performed to assess whether the NAAQS for each applicable pollutant is protected. The peak modeled impacts for the proposed facility are added to the modeled impacts of other permitted sources in the area, and a representative background concentration. Background values for PM<sub>10</sub> and SO<sub>2</sub> were taken from the Joliet monitor (1998 through 2000), while the NO<sub>x</sub> and CO background values were derived from the Braidwood monitor (1998 through 2000). The results of this analysis are contained below. The results indicate that the proposed plant will not cause or contribute to violations of the applicable NAAQS.

Results of the NAAQS Analysis (ug/m<sup>3</sup>)

Pollutant/ Averaging Period	Project Impact	SIL Impact Level	Project and Existing Source Impact	Monitored Background Value	Maximum Future Concentration	Ambient Standard (NAAQS)
SO <sub>2</sub> , 24-hour	82*	5	193.4	60.3	253.7	365
SO <sub>2</sub> , 3-hour	175*	25	741.9	180.8	922.7	1,300
NO <sub>x</sub> , Annual	6.78*	1	20.7	18.9	39.6	100
PM <sub>10</sub> , 24-hour	6.8*	5	71.8	59.0	130.9	150
PM <sub>10</sub> , Annual	1.0	1	15.4	23.0	38.4	50

\* Highest Second high concentration, consistent with the form of the NAAQS

\*\* Sixth highest concentration, consistent with the form of the NAAQS

The regional modeling did show exceedances for PM<sub>10</sub> and SO NAAQS in the vicinity of certain existing sources. However, these modeled exceedances are attributed to inaccuracies in the emissions inventory for existing emission units, such as default values for stack or exhaust temperature. Further, the modeling demonstrated that the proposed project does not contribute significantly to these exceedances. Therefore, the modeled exceedances are not considered to be relevant for the purpose of this PSD application.

Illinois EPA did request that Earth Tech address the PM<sub>10</sub> impact of the proposed plant considering condensable PM<sub>10</sub> emissions from the CFB boilers. While the PM<sub>10</sub> impact from the CFB boilers is increased when the condensable PM<sub>10</sub> is included, the maximum PM<sub>10</sub> impact from the project as a whole is not noticeably changed. The inclusion of condensable PM<sub>10</sub> emissions from the CFB boilers also does not change the size of the plant's significant impact area for either 24-hour or annual PM<sub>10</sub>. This is because the PM impacts are attributable to emission units other than the CFB boilers.

In summary, the air quality modeling submitted by Earth Tech in support of the Indeck's PSD application conforms to United States EPA and Illinois EPA guidance and shows that the proposed plant will not cause or contribute to violations of either the PSD increments or the NAAQS for appropriate criteria pollutants.

#### C. Ozone Air Quality

The Illinois EPA has conducted an assessment of the impact of the proposed plant and other proposed coal-fired power plants on ozone air quality due to their emissions of NO<sub>x</sub>, an ozone precursor. The Illinois EPA decided to conduct this assessment because of the magnitude of the potential NO<sub>x</sub> emissions of these plants and concern that the plants would interfere with the established plans to bring current ozone nonattainment area into compliance.

The assessment was conducted using the complex Urban Air Shed Model that was used by the Illinois EPA to develop Illinois' attainment plans for compliance with the 1-hour ozone air quality standard. The assessment addressed not only the proposed Indeck-Elwood plant but also other proposed coal-fired power plants. The potential emission of these plants were overlaid on top of the emission data and other information for various episodes that were used in developing and evaluating Illinois' attainment demonstration.

It was assumed that there would not be any additional reductions in the NO<sub>x</sub> emissions from existing power plants, which would continue to operate as currently required. These episodes are "actual" multi-day periods when exceedances of the ozone air quality occurred. The modeling that is performed evaluates what would now happen in the particular set of weather conditions given the reduced levels of emissions of ozone precursors that have been and will be achieved by the attainment plan. As part of the original modeling conducted for the attainment demonstration, the emissions and effect of new natural gas power plants was addressed.

The additional modeling that has been conducted shows that the new coal fired power plants would increase the levels of ozone in the air. However, these increases would not disrupt the attainment plan and would not interfere with timely attainment of the ozone air quality standard. In this regard, the new power plants do not add significantly to the ozone levels at the particular locations and times at which ozone levels are at their highest, at which ozone levels must be lowered for timely attainment of the ozone air quality standard.

D. Other Impacts

At the air quality impact levels for NO<sub>x</sub>, SO<sub>2</sub>, CO, and PM<sub>10</sub> emissions as shown above, there will not be a significant effect on soils, vegetation or visibility.

X. REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that the proposed permit meets all applicable state and federal air pollution control requirements, subject to the conditions proposed in the draft permit.

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Attachment 1 - Summary of Proposed BACT and LAER Determinations

CFB Boilers:

Pollutant	Emission Limit	Control Measures
PM	0.015 Lb/Million Btu, 3-Hour Block Average	Baghouse
SO <sub>2</sub>	0.15 Lb/Million Btu, 30-Day Rolling Average and 92% Reduction if SO <sub>2</sub> > 0.1 Lb/Million Btu	CFB Boiler Technology, Limestone Addition to the Bed, and Baghouse
NO <sub>x</sub>	0.10 Lb/Million Btu, 30-Day Rolling Average	CFB Boiler Technology and Selective Non-Catalytic Reduction (SNCR)
CO	0.10 Lb/Million Btu or 321.4 Lbs/Hour, 24-Hour Block Average	CFB Boiler Technology and Good Combustion Practices
VOM*	0.004 Lb/Million Btu or 11.7 Lbs/Hour, 3-Hour Block Average	CFB Boiler Technology and Good Combustion Practices
Fluorides	Addressed by Limitation on SO <sub>2</sub>	CFB Boiler Technology, Limestone Addition to the Bed, and Baghouse
Sulfuric Acid Mist	Addressed by Limitation on SO <sub>2</sub>	CFB Boiler Technology, Limestone Addition to the Bed, and Baghouse
Beryllium	Addressed by Limitation on PM	Baghouse

\* LAER

Auxiliary Boiler

Pollutant	Limitation	Control Measures
PM	--	Natural Gas as Sole Fuel
NO <sub>x</sub>	0.08 Lb/Million Btu	Low-NO <sub>x</sub> Burners
SO <sub>2</sub>	--	Natural Gas as Sole Fuel
CO	0.10 Lb/Million Btu	Good Combustion Practices
VOM*	0.02 Lb/Million Btu	Good Combustion Practices
Other	--	Natural Gas as Sole Fuel

\* LAER

Limestone Dryer/Mills:

Pollutant	Limitation	Control Measures
PM	0.005 Grain/dscf	Baghouse
NO <sub>x</sub>	0.073 Lb/Million Btu	Natural Gas as Sole Fuel and Good Combustion Practices
SO <sub>2</sub>	--	Natural Gas as Sole Fuel
CO	0.20 Lb/Million Btu	Good Combustion Practices
VOM*	0.02 Lb/Million Btu	Good Combustion Practices
Other	--	Natural Gas as Sole Fuel

\* LAER

Material Handling and Other Operations

Emission Unit	Limitation*	Control Measures
Material Receiving, Transfer, Handling, and Loading Operations	0.005 Grain/dscf	Enclosure and Baghouses
Storage Buildings	No Visible Emissions	Enclosure and Spray Systems at Material Transfer Points
Temporary Storage Piles	--	Covers and Application of Dust Suppressants
Cooling Tower	--	High-Efficiency Drift Eliminators, with Drift Rate Less Than 0.0005%
Plant Roadways and Open Areas	--	Paving, Vacuum Sweeping and Application of Dust Suppressants

\* Limitation addresses particulate matter emissions. This also addresses emissions of other pollutants.

Total Plant Wide Potential Emissions (Tons/Year)

Pollutant	Potential Emissions Tons/Year
PM/ PM <sub>10</sub> <sup>1</sup>	410
NO <sub>x</sub>	2,585
SO <sub>2</sub>	4,610
CO	2,860
VOM	108
Fluorides <sup>2</sup>	50.2
Sulfuric Acid Mist	10.4
Beryllium	0.004
Mercury	0.10
Lead	0.31
Hydrogen Fluoride	50.2
Hydrogen Chloride	988

Explanation: Emissions for CFBs are calculated with continuous operation.

Notes:

- <sup>1</sup> Paved roads and Miscellaneous fugitive particulate matter emission sources have PM and PM<sub>10</sub> emissions 4.5 and 0.9 tons per year, respectively.
- <sup>2</sup> The limit for fluorides is expressed in terms of hydrogen fluorides.

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